VOL. 173, NO. 5 AMERICAN NOVEMBER, 1950

DEC -6

Gas Journal

©CIB 276210

THE LIBRARY OF CONGRESS SERIAL RECORD

DEC 12 1950

Copy

CONTINUOUS GAS GENERATION

- Catalytic Reforming of Natural Gas, Propane, Butane, and Gasoline.
- Hi-Temperature Reactor Tubes of CARBORAX by CARBORUNDUM.
- Elimination of the Cyclic Process.
- Close Temperature and Product Control.
- Any available Fuel for Heating, e.g., Natural Gas or Bunker C Oil.
- Available with Waste Heat Boiler or other Recuperator.
- Dependable . . . Simple . . . Economical.

Experimental plant constructed by GASMACO on its property in Cleveland. Built for research and for demonstration of processes to the gas industry.

THE GAS MACHINERY COMPANY • 16114 WATERLOO ROAD

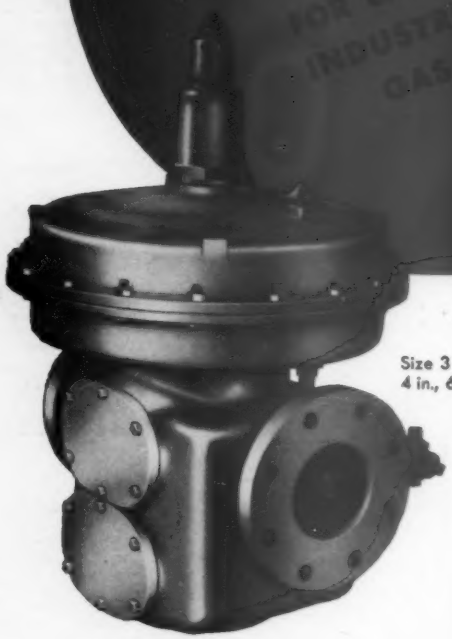
FIRM FRIEND
of the utilization man

When you need extreme control accuracy within a range of from one psi to atmosphere or less, the Crawford is your best bet. The extra large main diaphragm together with a separate seal diaphragm provides unmatchable sensitivity. Will handle inlet pressures up to 5 psi.
Write for bulletin 1044.

Size ¾ in. to 2½ in.

ROCKWELL-*Crawford*
SENSITIVE REGULATORS

FOR LARGE APPLIANCES, GAS ENGINES, INDUSTRIAL FURNACES AND SIMILAR GAS CONSUMING EQUIPMENT



Size 3 in., 4 in., 6 in.

IDEAL FOR SPECIAL SERVICES

By making slight alterations in standard construction the Crawford can be converted to a back pressure regulator; a pressure relief valve; a non-return valve; a flow controller for maintaining constant flow rates regardless of pressure changes; a shut-off valve, and a proportioning control.

In many of the standard and special applications remote control can be advantageously used since it permits the regulator to anticipate the pending change in flow rate or pressure.

Rockwell engineers will gladly study your special control problems and specify how the Crawford can be best applied.

ROCKWELL MANUFACTURING COMPANY
PITTSBURGH 8, PA.

Atlanta Boston Chicago Columbus Houston Kansas City Los Angeles New York Pittsburgh San Francisco Seattle Tulsa

DEC -6 1950

YOU CAN SEE THE DIFFERENCE WHEN YOU LOOK INSIDE THE BUILDING

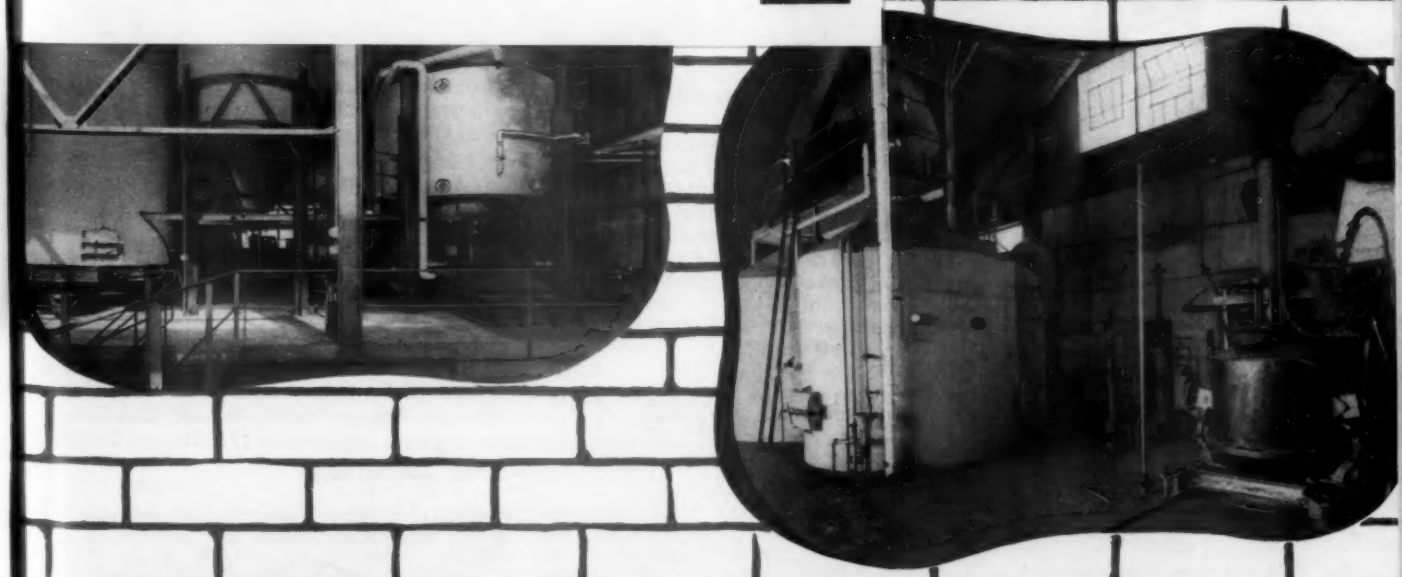
FIRST CLASS
PERMIT NO. 6234
(Sec. 34.9 P. L. & R.)
New York, N. Y.

BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

POSTAGE WILL BE PAID BY

AMERICAN Gas Journal

205 EAST 42nd STREET
NEW YORK 17, N. Y.



SEMET-SOLVAY ENGINEERING DIVISION
40 RECTOR ST., NEW YORK 6, N. Y.
ALLIED CHEMICAL & DYE CORPORATION

FIRM FRIEND
of the utilization man

When you need extreme control accuracy within a range of from one psi to atmosphere or less, the Crawford is your best bet. The extra large main diaphragm together with a separate seal diaphragm provides unmatchable sensitivity. Will handle inlet pressures up to 5 psi.
Write for bulletin 1044.

Size ¾ in. to 2½ in.

Size 3 in., 4 in., 6 in.

please enter my subscription
to
AMERICAN Gas Journal
ESTABLISHED 1859

NAME _____ (PLEASE PRINT)

STREET _____

CITY _____ ZONE _____ STATE _____

Subscription price $3 a year

By making slight alterations in standard construction the Crawford can be converted to a back pressure regulator; a pressure relief valve; a non-return valve; a flow controller for maintaining constant flow rates regardless of pressure changes; a shut-off valve, and a proportioning control.

In many of the standard and special applications remote control can be advantageously used since it permits the regulator to anticipate the pending change in flow rate or pressure.

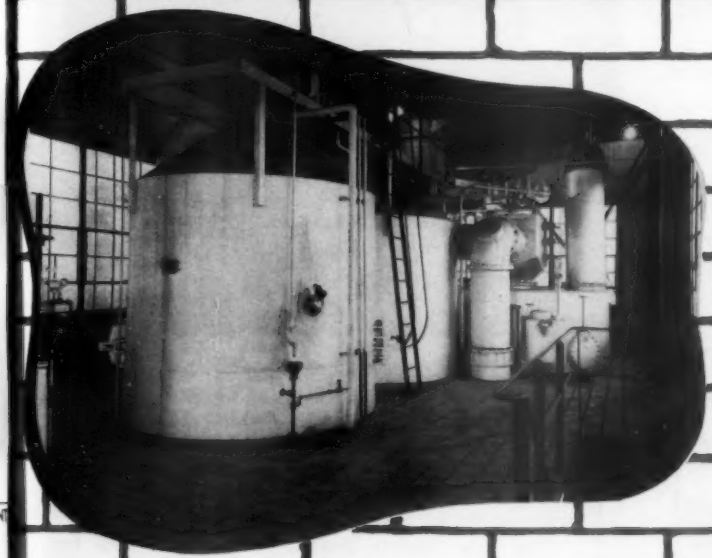
Rockwell engineers will gladly study your special control problems and specify how the Crawford can be best applied.

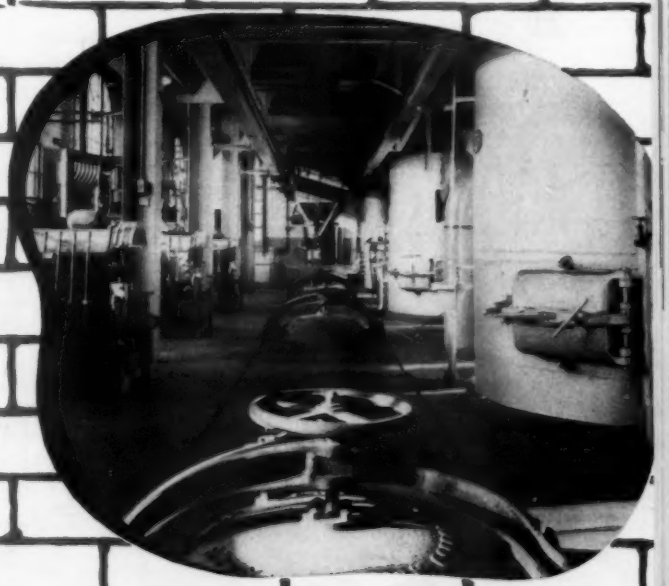
ROCKWELL MANUFACTURING COMPANY
PITTSBURGH 8, PA.

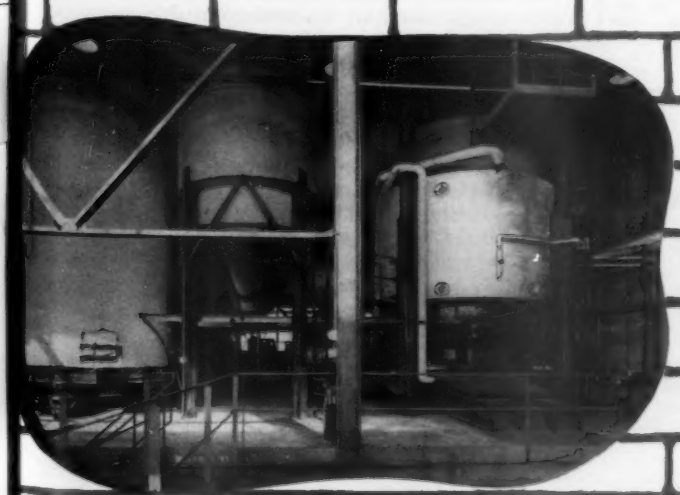
Atlanta Boston Chicago Columbus Houston Kansas City Los Angeles New York Pittsburgh San Francisco Seattle Tulsa

DEC -6 1950

YOU CAN SEE THE DIFFERENCE WHEN YOU LOOK INSIDE THE BUILDING







SEMET-SOLVAY ENGINEERING DIVISION
40 RECTOR ST., NEW YORK 6, N. Y.

ALLIED CHEMICAL & DYE CORPORATION

Now *Hot News* in ZONE-CONTROLLED Gas Heat...

STEWART-WARNER *"Safety Sealed"* HEATING UNITS!

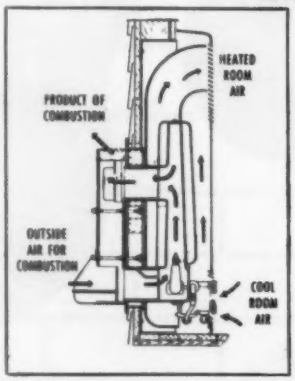
CHECK THESE SELLING FEATURES!

- Small, compact units applicable to one room, a suite of rooms or an entire building!
- All combustion products vented directly through a small, exterior wall vent!
- No room air is used for combustion!
- Dependable, low-cost *zone-heating* with manual or thermostat control!
- Easily recessed into walls of wood, brick, plaster, stucco or cement-block construction!
- Input ratings from 13,000 BTUs per hour to 31,000 BTUs per hour!

Exclusive "Safety-Sealed" Design

positively seals all products of combustion from contact with heated room air. The "Safety-Sealed" exterior vent draws all combustion air from outdoors. Vents all combustion products outside without a single moving part.

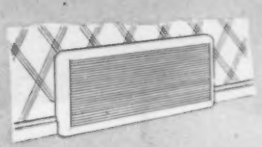
Model 991-14 14,000 BTU/HR 18" x 24" x 4"
Model 992-20 20,000 BTU/HR 18"x 38½"x 4"



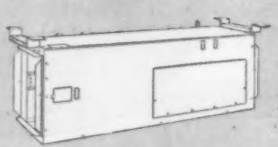
Quick, Easy Installation

in any outside wall. Aluminum-cast combustion chamber and burner fit right into the small wall recess. Interior room panel extends only 4 inches from the wall surface. Connects to the "Safety-Sealed" exterior wall vent.

These Stewart-Warner Heaters are "Safety-Sealed," Too!



SOUTH WIND ZONE HEATING SYSTEM. Easily installed in any inside or outside wall. Two suitcase-size units heat average home. Automatically modulated forced-air heat. Thermostat control.



SOUTH WIND ZONE FURNACE. Compact, forced-air unit. Easily tucked away under the floor, in a closet or any convenient space. Short ducts from centralized installation. Thermostatic control.

Versatile is the word for Stewart-Warner's new developments in zone-controlled gas heating! With single or multiple installations, safe, reliable heat is assured for any hard-to-heat room, any remote zone, or for an entire building.

The new "Safety-Sealed" Saf-Aire model, for example, is a completely independent, automatic gas heating system. Every room or zone is heated to its individual requirements with convenience, comfort and economy *unattainable* with conventional-type central heating plants.

Exclusive "Safety-Sealed" construction ***seals*** all combustion air and products from contact with heated room air. The patented exterior wall vent draws in *outside* air for combustion, then vents all combustion products outside.

Easy to install in any exterior wall, this "packaged" heating unit needs no chimney, ducts *or electricity!* Only one utility connection is required—the gas line. No basement, closet or floor space is wasted.

Available in Ivory, Beige or Aluminum finish with manual or thermostat control. Saf-Aire operates with complete silence on natural, manufactured or LP gas.

WRITE NOW for free information, specifications and performance data on the complete line of Stewart-Warner "Safety-Sealed" Gas Heating Units. Address inquiries to 1527 Drover Street, Indianapolis 7, Indiana.

Approved by American Gas Association

STEWART (Safety Sealed) **WARNER**

DOMESTIC HEATING

AMERICAN GAS JOURNAL, November, 1950. Vol. 173, No. 5. Published monthly by American Gas Journal, at 73 Main Street, Brattleboro, Vt. Executive and Editorial offices at 205 East 42nd Street, New York 17, N. Y. Subscription prices: United States $3.00 per year; Canada $4.00; foreign $10.00; single copies 50 cents. Entered as second class matter January 24, 1950, at the post office at Brattleboro, Vermont, under the Act of March 3, 1879. Printed in U.S.A.

AMERICAN Gas Journal
ESTABLISHED 1859

VOLUME 173 NOVEMBER 1950 NUMBER 5

This month...

Careful readers of the industry press, among whom we number our subscribers to the man, will observe that our published attendance figures on the recent annual convention of AGA (Page 17) are at variance with those of our esteemed contemporaries. The discrepancy lies in the fact that we were not satisfied with the routine approximations of the Association staff, so we adopted the revolutionary policy of taking the published registration lists for each day and adding them up. We made it 5142, and not 8000. The trouble we go to, to give our readers their $3 worth!

We are partial to what might be called literary back seat drivers; find them a great help in keeping our editorial strivings headed in the right direction. A few days ago our Kenner, La., subscriber advised that he would like to read something on high pressure measurement by orifice meters. We felt pretty cocky when we were able to advise him that a two-part article on this subject is already in type and will appear in the December and January issues of AMERICAN GAS JOURNAL.

The pipe line builders must have a time keeping up with their press agents. We note that *Gas* magazine for July 1950 credited Transcontinental with "the first crossing of the Hudson with a large natural gas pipe line." On July 20, *Gas Age* gave the story a play, even describing how air and water jets were used to blast out the trench in which the line rested. Our man on the Hudson River beat advises us that: (1) Central Hudson was the first to cross the river, finishing its job on July 8 (which we duly reported in our August issue); (2) Transcontinental still hasn't finished the Hudson River crossing (as of Nov. 1); and (3) the air and water jet experiment was abandoned long since and the under water trench was dug by the old prosaic dredge, which took its time but finally got there. These observations are not meant to be critical, of course; merely set down in the interest of editorial accuracy.

Contents

Editorial .. 11

Dehydration System Is Designed to End Storage Field Withdrawal Freeze-ups—Robert S. Jefferies .. 10

Conversion Creates Operating Problems for Service Departments—R. H. Bussard .. 13

Grass Roots View of Future Prevails at AGA Convention .. 17

GAMA Installs Its Officers at Atlantic City .. 23

Largest Wassail Held by Supplers' Gild .. 23

Hall, Dalton, Mosteller Win Top AGA Awards .. 26

Sellers May Recover Expected Profits in Breach of Contract Cases—Leo T. Parker .. 27

Index of Yields: Selected Utilities Stocks .. 29

Claim Common Stocks Safe for Savings Banks .. 29

Tests Show Interchangeability Ranges Are Best Determined by Experiment—Hall M. Henry .. 31

Bare Fuel Costs Mean Little in Industrial Economy—Frederic O. Hess .. 36

Pacific Northwest–Canadian Natural Gas Problem Gets Even More Complicated .. 38

Completion of 82 Mile Loop Brings So. Cal. an Additional 100 Million Capacity .. 39

News of the Gas Industry .. 40

Elliott Taylor · Editor

Howard F. Weeks · Associate Editor

Arthur Rohman · Western Editor **John F. Falvey · Financial Editor**

AMERICAN GAS JOURNAL, established 1859, is published monthly by American Gas Journal, Inc., 205 East 42 St., New York 17, N. Y. E. HOLLEY POE, President and Treasurer; ELLIOTT TAYLOR, Vice-President; LEWIS V. HOHL, Vice-President; M. E. KELLEHER, Secretary and Assistant Treasurer.
Copyright, 1950, American Gas Journal, Inc., New York, N. Y.

ADVERTISING REPRESENTATIVES: LEWIS V. HOHL, 205 East 42 St., New York 17; Telephone MUrray Hill 6-4360; URBEN FARLEY, 120 So. La Salle St., Chicago 3, Telephone FInancial 6-3074; JAMES C. MUNN, 2253 Delaware Drive, Cleveland 6, Telephone ERieview 1-1726; ARTHUR ROHMAN, 436 Douglas Bldg., Los Angeles 12, Telephone MAdison 6-0231.

Subscription Rates: United States $3.00 per year; Canada, $4.00; Foreign, $10.00. Single copies, 50 cents.

INSIST ON STRENGTH

Like a Percheron draft horse cast iron pipe is known for strength

Long life and low maintenance cost of mains laid under city streets depend not only on effective resistance to corrosion but on definite strength factors. The four strength factors that pipe must have to withstand beam stress, external loads, traffic shocks and severe working pressures, are listed on the page opposite. No pipe that is deficient in any of these strength factors should ever be laid in paved streets of cities, towns or villages. Cast iron water and gas mains, laid over a century ago, are serving in the streets of more than 30 cities in the United States and Canada. Such service records prove that cast iron pipe not only resists corrosion but combines all the strength factors of long life with ample margins of safety.

CAST IRON PIPE

in pipe for city streets

No pipe that is deficient in any of the following strength factors should ever be laid under paved streets.

CRUSHING STRENGTH

The ability of cast iron pipe to withstand external loads imposed by heavy fill and unusual traffic loads is proved by the Ring Compression Test. Standard 6-inch cast iron pipe withstands a crushing weight of more than 14,000 lbs. per foot.

BEAM STRENGTH

When cast iron pipe is subjected to beam stress caused by soil settlement, or disturbance of soil by other utilities, or resting on an obstruction, tests prove that standard 6-inch cast iron pipe in 10-foot span sustains a load of 15,000 lbs.

SHOCK STRENGTH

The toughness of cast iron pipe which enables it to withstand impact and traffic shocks, as well as the hazards in handling, is demonstrated by the Impact Test. While under hydrostatic pressure and the heavy blows from a 50 pound hammer, standard 6-inch cast iron pipe does not crack until the hammer is dropped 6 times *on the same spot* from progressively increased heights of 6 inches.

BURSTING STRENGTH

In full length bursting tests standard 6-inch cast iron pipe withstands more than 2500 lbs. per square inch internal hydrostatic pressure, which proves ample ability to resist water-hammer or unusual working pressures.

CAST IRON PIPE RESEARCH ASSOCIATION, THOS. F. WOLFE, MANAGING DIRECTOR, 122 SO. MICHIGAN AVE., CHICAGO 3.

SERVES FOR CENTURIES

KOPPERS

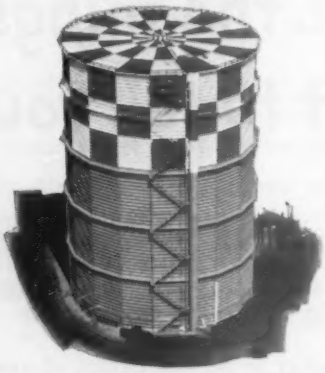
builds *any size* WATER SEAL Gas Holders up to 10,000,000 c. f.

GAS HOLDERS represent a huge capital investment. Make sure you get the most for your money—specify Koppers. Only Koppers is equipped to design, engineer and fabricate *entirely within its own plant* any size Water Seal Gas Holder up to 10,000,000 c. f. And no matter how large the job, when you specify Koppers, you are assured erection will be completed well before the deadline.

In all types of gas plants from coast to coast, Koppers Water Seal Holders have earned a reputation for long life. For example, the Bartlett Hayward Company, now a part of Koppers Company, designed and built its first Water Seal Gas Holder in 1876. *It is still in active service!* The same kind of accurate engineering and rugged construction established then is built into every Koppers Water Seal Holder today.

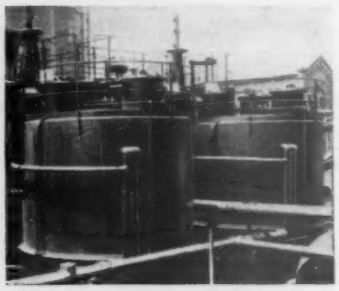
Bulletin 101 contains full technical information and specifications. For your personal copy, write today to: KOPPERS COMPANY, INC., *Gas Apparatus Dept.*, 341 Scott St., Baltimore 3, Maryland.

KOPPERS WATERLESS GAS HOLDERS



Provide long life, low-cost gas storage. Use 1/5 smaller heating plant for winter operation. Take less ground space for equal capacity. Crown is protected at all times, no danger from snow or ice. Painting, other maintenance costs are extremely low. For complete story write for Bulletin 102.

KOPPERS-ELEX ELECTROSTATIC PRECIPITATORS



Ideal investment for gas plants to recover profitable tars, oils, by-products, carbon black, etc., and to clean blast furnace gas used in coke ovens. Efficiency guaranteed to any amount you specify. Every installation designed to your requirements, delivered under one contract. Fly Ash Precipitators for nuisance abatement also available. For full information, write, outlining your problem.

SEND FOR INFORMATION!
No obligation . . . write, listing bulletins you want.

KOPPERS

KOPPERS COMPANY INCORPORATED

METAL PRODUCTS DIVISION, BALTIMORE 3, MD.

GAS HOLDERS • ELECTROSTATIC PRECIPITATORS

Editorial:

Overgrown Conventions

WE are loath to believe that our sometimes critical reflections have made us the rallying point for all of the chronic malcontents in the industry; yet unless we accept that premise we are hard put to reconcile the comments of many of the exhibitors at the recent Atlantic City convention with the rosy professional viewpoint expressed by members of the staff of both AGA and GAMA.

In simple understandable terms, a lot of exhibitors didn't think they got their money's worth. Certainly it cannot be denied that attendance in the exposition hall appeared to be far below that of previous years. Yet the exhibits that were there for gas men to see far surpassed in showmanship and display anything that we have ever seen in 25 years of convention going.

It must be conceded that anyone who didn't take the time and trouble to inspect the exhibits carefully could hardly be regarded as a likely prospect in the first place. So there is no use berating those who elected to let one or two casual strolls through the aisles suffice for a thorough indoctrination in what's new in appliances and equipment. It is to be assumed that they took enough time to learn all they needed to know—or wanted to know.

But a show that cost a million dollars to stage, as the round number experts tell us this one cost, should certainly have been arranged so that the direct impact of some of that promotional money would be felt by the buying public.

There are two classes of exhibitors at any AGA-GAMA show—one the manufacturers of the gas appliances and equipment that must be sold to the consuming public, and, second, the makers of apparatus, machinery and supplies that sell to the gas utilities. About the only thing the two groups have in common is that they are housed under the same roof. No manufacturer of gas machinery would set up an elaborate and expensive display to show off his reverse flow automatic control equipment to a bunch of housewives. And while the stove maker may be pleased to display his newest models to a gas plant superintendent, his primary interest is in getting the members of the utility sales forces, from top brass down to the door bell experts, clustered around his booth.

Of 164 exhibitors whose products we know, we found that 81 had equipment or devices of interest almost exclusively to operating gas men. Only the operating men out of the 5142 total convention registrants were of the slightest interest to them. The 83, who are makers of appliances and controls and other equipment that sells to the general public, whether through gas utilities or dealers, are looking for an entirely different audience.

The biennial gas industry exhibit has become traditional with both AGA and GAMA. To hold it anywhere but in Atlantic City seems to be as unthinkable as holding a meeting of the College of Cardinals in a synagogue.

But that doesn't say that either fetish is right; or if it ever was right that it may not now have outlived its usefulness, outgrown perhaps its economic justification.

We believe the time will come when the whole conception of the big annual convention of all the gas industry will have to be altered. Other sections of the country will have to have some attention, not only during the odd years, but when an exhibit is scheduled to be staged.

And it seems highly reasonable to assume that the manufacturers who foot the show bills would get a better run for their money if exhibits were staged at the time of sectional rather than general conventions of the association.

Thus, equipment builders for the industry would show their wares at technical and operating conferences, where a high percentage of those in attendance would be directly interested in what they had to show. And their interest would mean something because they would be logical prospective customers.

Then, the stoves, water heaters, refrigerators and other consumer equipment would be shown at a joint meeting of all utility executives and employees primarily interested in product sales and sales promotion. Meetings of this kind could be given a tremendous plus value to the manufacturer by holding at least one afternoon open for an inspection of new appliances by the general public in the convention area.

One of the gravest concerns of gas appliance manufacturers is the realization that the public is coming more and more to regard electric appliances, and particularly the electric range, as modern—dating gas as old fashioned and outmoded. Just to look at the imposing and beautiful display of new gas models at Atlantic City would dispel that misconception from anybody's mind. Yet the very public those manufacturers of modern gas appliances have to reach if they are to survive was rigorously excluded from the sacred precincts of the exhibit hall.

If the annual convention of the American Gas Association has grown so big and cumbersome that it lacks both definition and theme, it seems an admirable time for that hallowed institution to get ready to trim itself down to fighting size. We believe that it reached that point in October 1950.

Elliott Taylor

Dehydration System Is Designed to End Storage Field Withdrawal Freeze-Ups

by Robert S. Jefferies

Ass't Chief Engineer, New York State Natural Gas Corp., Pittsburgh, Pa.

IN 1940-41, as the cost of natural gas for fuel became more competitive in relation to other fuels, thus increasing the demand, we with most other natural gas companies found that we could no longer supply the peak demand merely by pipe line capacity. Accordingly, it was necessary to have an extra supply of gas near to the market available for peak demand delivery. As underground storage of gas in depleted pools appeared to be the best solution, a number of projects of this nature were started. In their operation through the following years various problems were encountered. One of these was the problem of hydrates.

In early storage pool operations, when the demands were not too great, pressures were relatively low, approximately 300 psig, and no hydrate trouble was experienced. However, as storage pressures were increased to meet greater demands, freezing was experienced at the cutting valves where the gas was fed from the storage pools into the lines. Then, this was the only point of difficulty because the storage gas was still a minor proportion of the main line flow and did not add enough water to the main stream to cause freezing in the transmission lines. This problem was overcome by installing a heat exchanger before the regulating valve. The gas was heated to a temperature sufficiently high so that the dew point was not reached after expansion.

At the present time, however, we are operating storage pools at pressures of 1000 psig and are contemplating pressures of 1500 to 2000 psig. At these pressures the hydrate problem has two new aspects. First, if the gas comes from a low pressure line, the field lines may freeze off while storing gas. Second, if the gas coming from storage is wet, as is usually the case, there is the possibility of adding sufficient water to the main line flow to cause freeze ups therein. At our Boom storage pool, where we have a fair sized storage pool and a station to pump into and out of storage, indications were that we would be likely to experience main line difficulties during heavy withdrawal periods.

At Boom station the gas for storage is taken from a high pressure pipe line. This gas has been dehydrated for transmission at 1200 psig. Therefore, there is no reason to expect hydrates to form while storing gas up to 1200 psig. Indications were, however, that gas coming from the storage field was saturated with water at the flowing conditions. To check this, and to obtain some data upon which to base the design of a dehydration plant, we kept records during the winter of 1949-50 of the gas conditions. At the station, the temperature of the incoming gas, the dew point and the quantity of flow were secured regularly and recorded. Also, a record was kept of all water taken from field drips. Tabulation of these data revealed some interesting facts.

Temperature Behavior

The flowing temperature of the field gas was found to be about 40-42° F at low flows. However, as the flow increased, the gas temperature tended to rise, temperatures of 55° F being experienced at some of the higher flows. The length of period over which the high flow was maintained also had a material bearing on the flowing temperature. If the flow were of short duration, the temperature did not rise materially. When the flow was maintained over a long period, the temperature gradually rose until it levelled off at a higher point. This temperature behavior indicated that the gas coming from the wells was probably considerably warmer than was recorded at the station. Investigation of the possible bottom hole temperatures at a depth of about 5000 feet showed this to be in the range of 110-120° F. However, there was a temperature drop across the face of the sand and through the well tubing, so that the gas would not reach the surface at this temperature. The well head temperatures after considering the factors involved were estimated to be in the range of from 70-80° F.

The dew points taken on the storage gas coming to the station over a period of time ranged between 26° F and 55° F. While the storage pool pressure was still fairly high, the dew point was from 26°-30° F. However, as the pool pressure became lower, the dew point temperature increased until it and gas flowing temperature were approximately equal, ranging from 40° F to 55° F.

Also during this time a record taken of the liquid collected in the field line drips showed 1.3-2.75 gallons per million cubic feet of gas, the higher quantity of drip collected liquid being obtained at the lower field pressures. The weight of liquid per million cubic feet at the drip was added to the weight of water per million cubic feet as indicated by the dew point at the station to obtain a probable weight of liquid per million cubic feet at the well head. Using this quantity of water and the well head gas pressure, assuming the gas to be saturated, a temperature at the well head was read from a natural gas dew point chart. This coincided very closely with the before mentioned assumed well head temperature of 70-80° F.

With this information, which was found to be rather incomplete for the purpose, we set out to select a dehydration system for our storage field. The conditions for design were:

- Maximum design pressure—1500 psig
- Maximum probable transmission line pressure—500 psig
- Required dew point—15° F at 500 psig
- Maximum flow—300 MMcf/day at 300 psig
- Gas condition saturated at well head conditions of—80° F Minimum 300 psig

The operation of a storage pool is subject to many changes in quantity of flow. Primarily, it varies with the cold weather and the peaks of consumer demand. Over several days the required flow can vary from nothing to the maximum. Also, the load varies over the 24 hours of the day causing considerable demand fluctuation. Therefore, any plant installation has to be capable of

doing the job with considerable load variation.

Theoretically, the best place to install the dehydration plant would be at a point where it would eliminate the possibility of all pipe line stoppages due to hydrate formation. Therefore, if field line freezes are to be eliminated it would be necessary to place the dehydration plant as close to the wells as possible. Otherwise, a dehydration plant would be installed at the storage compressing station to protect the main lines from becoming dangerously saturated. If the dehydration plant were installed at the gree. Several manufacturers of this type of equipment were also consulted. The dry desiccant type of plant appeared very satisfactory except for one difficulty. In the design of these plants, sufficient pressure drop is required in the contactors to circulate the regeneration gas through the contactor off stream. Various designs required from 25-40 per cent of the rated load to obtain this flow. Therefore, for an automatic plant in the field this type could not be operated without attendance due to the fairly rapid load fluctuations, from practically no flow to large flows.

ture were 70-80° F as indicated, the 50° F depression which a glycol plant will give would lower the dew point to 20-30° F—not low enough to insure against line stoppages.

For central station installation, the glycol plant at first glance looked very attractive. The cost was considerably less than a solid desiccant type plant. The 50° F depression was sufficient if calculated from the 55° F flowing temperature, which had been recorded the previous winter. However, as before noted, the flowing temperature of the gas tended to rise as the rate of flow

This is the Boom station, New York State Natural Gas Corp. From left to right is the control office, five gas cleaners, gas headers, and compresser building. The dehydration plant will be in back of the control office.

station, it would be necessary to inject alcohol into the gas at the wells or use some other means to prevent hydrates forming before the gas reached the compressing station.

Location of dehydration plants in the field at the well heads indicated that a total of seven plants would be required. This placed two plants, one toward each end of the pool, to take the combined flows of the smaller end wells. The remaining five plants necessarily would be placed as close as possible to the well heads of the five wells with large flows in the center of the pool. Dehydration plant operation in the storage field imposed several problems. First, there were no operators to control these plants at the points where they would be installed. A crew for each plant would involve a considerable sum for operating costs. Therefore, automatic operating plants for these points were indicated. Several manufacturers of this type plant were consulted and the feasibility of each kind was investigated.

Primarily, it is desirable to extract all of the liquid possible from the gas stream, thus automatically taking care of all gas conditions of flow for the pipe lines. A dry desiccant type of plant will eliminate all hydrates to a practical de-

Automatically operated glycol type plants were also investigated for use in the field installation. The glycol plant easily met the objection of variable flow as it could be operated from no flow to full flow without any difficulties. However, the glycol plant had two different problems. First, power was needed for operating the glycol circulation pumps. These could be run electrically or with gas driven reciprocating pumps.

There was no power supply at the desired location, and while the power company would install a line, due to the poor load factor the rates were high. A power line could be built from the station to the various locations, but this did not appear very practical. If gas driven pumps were used, there was considerable waste of high priced gas from the exhaust of these pumps to atmosphere.

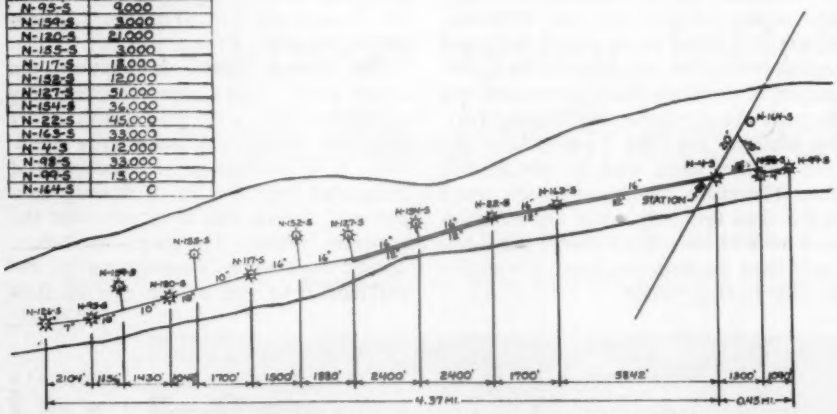
The second difficulty was that glycol was believed to get very viscous at lower temperatures. This characteristic would be a potential source of trouble during extremely cold weather. It also appeared that a glycol plant was on the border line of dehydrating capacity for low field pressure operation. When the storage pool pressure would be equalized to the line pressure, if the well head tempera-

increased. If in the future, for larger anticipated flows, this flowing temperature approached the indicated well head temperature of 70-80° F, then the 50° F depression would no longer be sufficient. On the basis of this possibility, the glycol type of plant was discarded for central station use.

In selecting a solid desiccant type of plant for installation at Boom compressing station, the only difference in choice concerned details, as the solid desiccant cycle in principle is the same in all plants.

The first decision was the design pressure of the plant. The storage pool pressure is anticipated for future use at 1500 psig. The maximum flow is calculated to be 300 million cubic feet per day. However, at the time when 300 million cubic feet are being withdrawn, the well head pressure is calculated to be about 800 psig, when the rock pressure is 1500 psig. As the line pressure is 500 psig, there is still a 300 psig cut to be made in the pressure of the storage gas before it enters the line. Therefore, at maximum flow, the dehydration plant has only to be good for 800 psig. As the flow diminishes, the well head pressure increases so that a larger pressure cut has to be taken prior

WELL NO.	DELIVERABILITY
N-126-S	9,000 MCF/DAY
N-95-S	9,000
N-139-S	3,000
N-120-S	21,000
N-155-S	3,000
N-117-S	18,000
N-138-S	12,000
N-127-S	51,000
N-154-S	36,000
N-22-S	45,000
N-163-S	33,000
N-4-S	12,000
N-98-S	33,000
N-99-S	15,000
N-164-S	C



Boom storage pool in the Oriskany Sand near Lawrenceville, Pa. The drawing shows location of wells, pipe lines, compressing station, and table of deliverability.

to the gas entering the pipe line. It was decided therefore to design the dehydration plant for 1000 psig maximum pressure and install a pressure regulator ahead of the plant. Alcohol can be injected ahead of this regulator to prevent freezing. This effected a considerable saving in the cost of the plant.

In storage pool operation, as stated before, there is considerable variation in the flow demand, varying from several million cubic feet to the pool capacity. Therefore, a plant with considerable flexibility was required. Proposals using two large contactors were considered, but were rejected in favor of a six contactor installation which gave the desired flexibility.

The contactors had to be designed quite large as the velocity through the beds is greatest when the pool pressure and line pressure are equalized. The plant is designed to handle 300 million cubic feet per day at 500 psig.

Today, a large number of plants are being installed with direct fired regeneration gas heaters. Due to the hazardous location, however, we did not favor this method of heating. A packaged steam boiler is being installed to supply necessary steam.

The operation of the plant and flow therein are as follows:

Inlet gas is brought into the dehydration plant through a control valve which is set to limit the maximum pressure on the dehydration plant equipment to 1000 psig. After passing through the pressure reducing station, the gas is sent through two inlet scrubbers operating in parallel. The function of these scrubbers is to remove possible entrained water and hydrocarbons. The gas then flows through headers arranged to distribute the flow through four dehydrators operating in parallel. Flow on the drying cycle is down through the desiccant beds. We are using florite on this installation. Inlet gas to the individual dehydrators is measured by a recording flow indicator to provide a record of the operation and to insure equal distribution of the gas through the bed.

After the dry gas leaves the dehydrators, it is mixed with gas coming through the by-pass system. This by-pass as proposed will decrease the size of the main dehydrators, and reduce the operating cost. The volume by-passed is controlled by a recording dew point controller which will continuously measure the dew point of a representative sample of the dehydrated gas which goes to the gas transmission line. The volume of gas used as a sample is small and after it goes through the recording dew point instrument, it can be put into the fuel gas header.

On the regeneration cycle, the regeneration gas flows through the regeneration gas heater where it is heated with steam to approximately 375° F. The hot gas is then put through a wet dehydrator bed to regenerate the bed by driving out the absorbed water. Regeneration is made up flow through the bed to reduce attrition of the desiccant. It also decreases heat requirements since absorbed water in the top of the tower is not driven through the whole bed. In addition, materials causing fouling such as compressor oils and residual hydrocarbons are not driven deeper into the bed. When the effluent gas from the dehydrator bed reaches a temperature of approximately 300° F, the bed is ready to be put on the cooling cycle.

Cooling a dehydrator bed is accomplished by sending the hot regeneration gas through the regeneration gas cooler. The cooled gas is then sent through the regeneration gas scrubber to remove entrained water. Then the gas goes to the dehydrator bed to be cooled. The flow on the cooling cycle is down through the bed. The gas then goes to the outlet header, thence to the gas transmission line. The regeneration gas cooler is sized to cool regeneration gas to 70° F at 500 psig (under maximum conditions) when the available cooling water is 40° F. A temperature controller is provided to limit automatically the flow of water through the cooler to keep gas temperature in the regeneration gas cooler above the hydrate point at all times.

The regeneration gas scrubber has capacity to hold 2000 lbs. of water which is the approximate amount of water retained by one bed of desiccant on drying cycle. The scrubber is made this size to avoid the possibility of overflowing water into the gas line if the drainer provided should fail to operate properly.

It is proposed to operate four dehydrators in parallel to decrease the size of the vessels and velocities through the beds. Thus four dehydrators will be on the line, one dehydrator will be on regeneration and one dehydrator will be on the cooling cycle at all times. Accordingly, at 500 psig operating pressure one dehydrator bed will be taken off the drying cycle every four hours, regenerated and cooled during the next eight hours. Therefore, all dehydrator beds have capacity to operate on a 16 hour drying cycle at 500 psig operating pressure.

Sees Anti-Trust Charges Proved Unjustified

The acquittal, early in October, of two Philadelphia firms on a Federal court charge that they conspired to fix the price of Servel refrigerators sold in their area was cited by W. Paul Jones, President of Servel, Inc., as added confirmation of the law abiding practices of the firm and its distributors and dealers.

While pointing out that Servel was not a party to the suit, Mr. Jones said that the results bore out the company's belief that this and similar actions against Servel and/or its representatives were unjustified. His statement follows:

"We are naturally pleased at the acquittal of The Philadelphia Gas Works Co. and Motor Parts Co. on charges that they conspired to fix the retail price of Servel refrigerators in their area. While Servel was not a party to this suit, it is gratifying to get added confirmation of the fact that our dealers and distributors are operating in accordance with the anti-trust laws. We have felt right along that this and similar actions against Servel and/or its representatives were unjustified. This verdict bears out this belief."

Conversion Creates Operating Problems For Service Departments

by R. H. Bussard

Washington Gas Light Co., Washington, D. C.

PRACTICALLY all companies when preparing for a changeover instituted a pre-conversion program for service department employees. This consisted of studying the behavior of natural gas, emphasizing the characteristics of satisfactory natural gas flame; training in the technique of converting appliances; and studying appliances and installations which require special attention.

Beyond this type of training is the importance of selling the story of natural gas to the service department personnel. A very important person in the conversion picture is the customer-contact employee. If he is not given proper understanding of the problem before the changeover begins, in many cases he can very easily create customer reluctance to accept the "new" gas and he may cause unnecessary service requests and special investigations.

The average person has the desire to show his "superior" knowledge. Even during normal operations, the matter of one employee criticising the work of a fellow employee is an everlasting problem. When faced with a conversion performed by personnel other than company employees, the temptation to this inherent weakness is great and it is with grief and despair you hear the complaining customer say, "Your serviceman told me the men who converted my appliances didn't know what they were doing, and now my bill has increased, the water heater is leaking, the maid has headaches, etc."

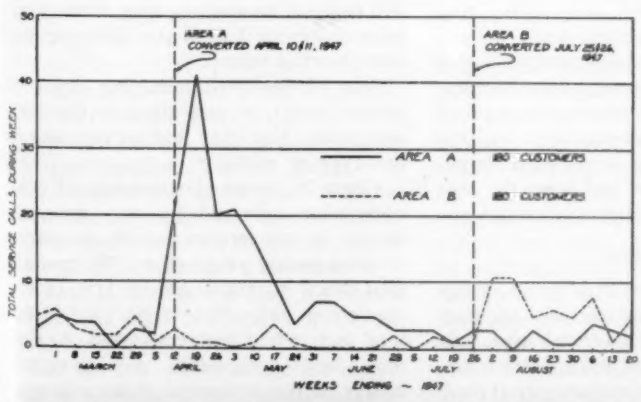
When streaming of top burners was noticed in Washington, the company personnel studying this problem unfortunately began referring to these ranges as "sub-standard" stoves and used the expression of "insulating" to mean sealing and stripping to divert oven products of combustion from the top burner compartment. In a short period of time these expressions spread to the customer-contact man and it wasn't long before customers were being told by some servicemen, when such a range was encountered, "I'm not equipped to correct this for you madame, as this is a 'sub-standard' range and it will have to be 'insulated'." This could have been a customer who bought from the company a high-priced fully insulated range. Would you like to be on the company end of the telephone call resulting from this serviceman's statement?

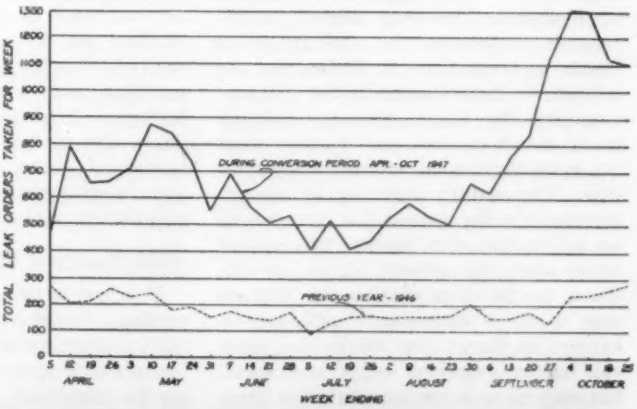
If she didn't buy the appliance from the company, then she calls the builder, real estate agent, or apartment house manager and raises Holy Cain because she has an inferior product and she knows it is inferior because the gas man told her so. What happens here? The builder or agent calls the company, swears he will never use gas again, threatens suit because of libelous expressions, and demands the company replace the range with the type designed for natural gas.

There are those calls where the customer contacts the company, is dissatisfied with the appliance operation and knows her appliance will never operate to her satisfaction for the serviceman told her, "Natural gas will never work as well as manufactured gas."

These instances point out the value of selling customer-contact employees on the benefits of the changeover. If they know it will result in a brighter future for them, then they will help to sell the dissatisfied customer rather than heap coal on the fire. Educate them on the problems relating to conversion. If you decide to utilize the services of a contractor to perform the conversion, point out the advantages of this method, the magnitude of the project, and the problems of the contractor. If this is done properly your men will be proud of the job being performed, be less anxious to be critical, and be tactful in their

Presented at annual meeting of the American Gas Association, Atlantic City, Oct. 2-5, 1950.



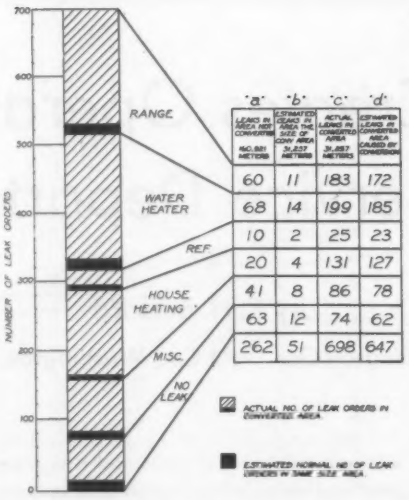


contacts. As part of its training program, one company used a two-act skit to emphasize proper customer approach, courtesy, and general conduct.

Selling the story of natural gas to employees, prior to the changeover, is an extremely important item and should not be overlooked in the maze of problems that arise when preparing for a conversion.

The largest single difficulty may be in converting the most common of all appliances and the one which at one time was least expected to give trouble—the range. As pointed out in the report of the 1930 AGA Subcommittee on "The Study of Factors Involved in Changeover from Manufactured to Natural Gas" (American Gas Association Proceedings, 1931), in the early days of changeover it was found that the problem of oven flame floating was quite worrisome, especially when the combination coal and gas range was encountered. This required additional secondary air openings and did not permit over gassing of the oven if desired. More recently, in certain types of ranges when natural gas is used and the oven is in operation, it has been found that the products of combustion from the oven leak into the top burner compartments causing poor ignition and lifting of the flame from the top burner ports, giving what is known as a "streamer." To correct this condition frequently involves caulking, use of special design flue outlet fittings and metal strips, or remodeling. Naturally you will be faced with customer resistance when you change the complexion of her favorite appliance. It is highly recommended, that if it is at all possible, the performance of different makes of ranges be studied before the conversion starts. Design correction methods, educate men in recognizing "streamers", and train and equip a special group of men to handle the volume expected.

Because of the slower burning or less stable natural gas flame as compared to a gas containing an appreciable amount of hydrogen, you may expect to encounter difficulties in converting oil burner pilots and burner flames that are subject to disturbances in the air surrounding the flame, such as railroad track switch heaters and burners used for spot heating in manufacturing tin cans. The sudden agitating of the atmosphere in the combustion chamber of an oil burner, the "swish" of railroad trains over the switch heater, or the speed of tin cans passing the burner, may create a disturbance sufficient to extinguish flame. The oil burner pilot can be the source of many headaches, not only from a service angle but from high bill complaints, if the problem is not studied and sufficient men are not well skilled in its proper conversion.



"a" LEAKS IN AREA NOT CONVERTED NO. 551 METERS	"b" ESTIMATED LEAKS IN AREA THE SIZE OF CONV. AREA 2,257 METERS	"c" ACTUAL LEAKS IN CONVERTED AREA 2,257 METERS	"d" ESTIMATED LEAKS IN CONVERTED AREA CAUSED BY CONVERSION
60	11	183	172
68	14	199	185
10	2	25	23
20	4	131	127
41	8	86	78
63	12	74	62
262	51	698	647

Chart III

It is recommended you investigate the conversion of dental torches, laboratory burners and other special burners. You may find it difficult to locate lab burners designed for natural gas operation that will give satisfactory service. This condition has been investigated by the National Bureau of Standards and details are given in "A Study of Laboratory Bunsen Burners for Natural Gas" by John H. Eiseman NBS42, 541 (1949) RP 1991.

In many instances it is a problem to provide full rating or previous input on certain commercial appliances, more notably steam boilers, and boilers equipped with ceramics. This is due mainly to two reasons: (1) natural gas has a lower flame propagation rate and for its combustion, a relatively larger combustion space is needed; and (2) greater primary air inspiration is required, sometimes beyond the range of the shutter or venturi design. The almost universal practice of over gassing of these appliances, which was possible when using manufactured gas, makes the problem more acute. Lowering burners and increasing orifice pressures are examples of how satisfactory conversions may be accomplished.

On radiant fire heaters, and gas logs it is difficult to obtain good natural gas performance after conversion because of minor dirt or dust obstructions and the customers desire to have these appliances over gassed as had been the case when using manufactured or mixed gas.

What Problems Follow?

You may expect to experience an immediate increase in service requests from customers in converted areas. As conversion progresses, the men performing the conversion become more skilled, procedures are improved and the efficiency of the conversion increases, thus service requests per unit of customers reduce.

Every service department supervisor when approaching a conversion job wants to know how much the work load will increase and how long it will last. There is no one who can give the answer. Many factors are involved and each conversion will most certainly have its own service load characteristics, depending on saturation of different makes and types of appliances, efficiency of the men performing the conversion, the season of the year when the conversion is performed, the condition of the distribution system, etc.

For a detailed study of the immediate effect a change-over has on service requests, the experience of our company is shown on Chart I. Two areas were studied. In each area 180 customers were selected for observation, representing a like number of appliances by types. Total service calls per week for these customers were plotted for seven weeks prior to the conversion of area A, which indicates they were comparable customers. Area A was converted April 10 and 11, 1947. (The changeover project started April 1, 1947.) Area B was converted July 25 and 26, 1947. Note the peak in area A is considerably higher than that of area B. This was probably due to two factors: (1) The conversion efficiency at the time of area A conversion was relatively lower than when area B was converted because the conversion was only a few days old when area A was converted; and (2) the effect of deficient conversions of house heating equipment in area A was immediately felt since house heating equipment was still in use, whereas in July, when area B was converted, this was not true. The chart gives an indication, and only an indication how long the immediate impact of a conversion is felt in any particular area. You will note I say immediate impact. You, who may have a conversion performed in the summer and also have an appreciable saturation of house heating, will not experience the full force of service requests of the conversion job itself until you advance into your heating season.

One of the most annoying types of service order, at any time, is the leak complaint. You may find an increase in this type of order.

Chart II shows the number of leak complaints received by the company during its conversion period compared to same period year before. We made a spot check of leak orders in May of the conversion year when 16 per cent of the total meters had been converted. At that time leak complaints per thousand meters in the converted areas averaged 22.3, and 1.6 for those meters in the unconverted area. A study of the leak

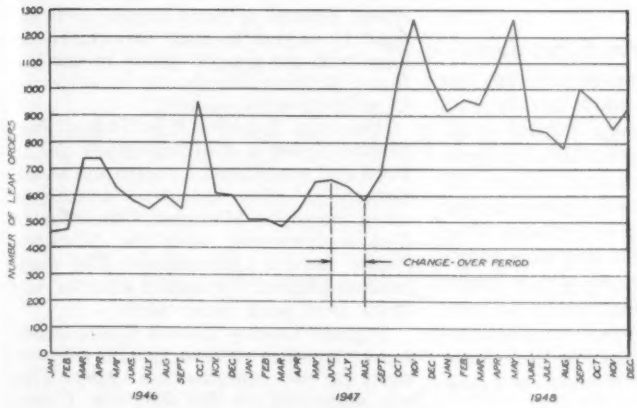


Chart IV

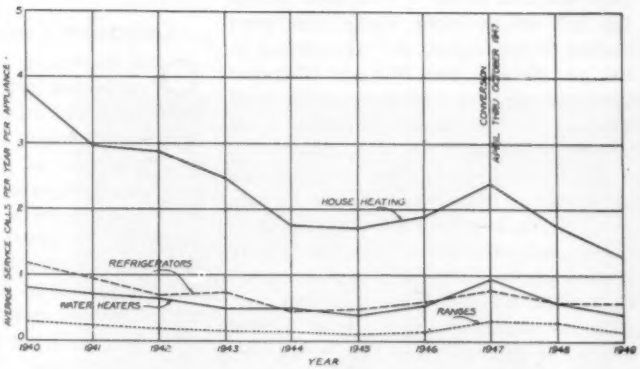


Chart V

orders for this spot check is shown on Chart III. At this time there was recorded 698 leak orders for the 31,257 meters converted and 262 orders for the 160,921 meters not converted. An attempt was made to estimate the number of leaks which were the result of conversion, by first recording in column "a" the leaks received in the unconverted area (160,921 meters); in column "b" estimating the leaks that would have been received from an area the size of the converted area (31,257 meters) based on the experience in the unconverted area (leaks in "a" multiplied by 31,257 ÷ 160,921); and subtracting this from the actual number of leaks received from the converted area (column "c"). The result is shown in column "d". By analyzing column "d", the conclusion was drawn that, although many of the leak complaints may have been caused by the mechanical conversion of the appliances, most certainly an appreciable number were not. It was therefore reasoned that many minor leaks existed prior to conversion but because of the difference in odor of the two gases and the publicity given the conversion job, the customer became more critical of appliance operation and more safety conscious, and requested service that normally would not have been requested. Although the conversion was completed in October 1947 the leak calls did not return to normal until about the middle of December of that year. The peak shown in October 1947 was caused by the accumulated effect of leaks from newly converted areas plus leaks at house heating equipment converted during the summer which were not detectable until the equipment was started.

Chart IV shows the leak experience before and after a changeover for another company.

Still another, which converted in August to October 1949 reports leaks in January to May 1950 were 25 per cent higher than same period 1949, but in June and July 1950 they dropped below same period last year.

One organization that studied leaks at service regulators has recorded the following:

	Regulators Inspected	Number Leaking	Percentage Leaking
Prior to natural gas	9,737	1,557	15.9
After natural gas	15,892	4,217	26.5

In general, leak complaints will increase appreciably during and after a changeover, to some extent due to the mechanical conversion of the appliances but to a larger degree due to the drying of gasketed joints, meter washers, regulator diaphragms, change in odor, slower ignition of range top burners and psychological effect of a complete readjustment of burners.

You probably will find that converting burners to rated input results in numerous complaints, for in many cases the input prior to conversion was either smaller or greater than rating, according to the whim of the consumer. Especially is this true in the case of hotel and restaurant equipment. The typical chef has always insisted on over gassed burners and unless you reproduce this condition at time of conversion you most certainly will receive requests for readjustments.

With the increase in service requests during and immediately after conversion planning for receiving and handling of this abnormal quantity of service requests is essential. Quoting again from the 1930 subcommittee report previously mentioned: "It is recommended telephone facilities be investigated and a definite and strict routing of complaints be established to avoid delay, confusion and duplication."

In many changeovers the completion of the conversion job does not mean immediate termination of service department difficulties. The distribution of the new gas having characteristics vastly different from the old gas, along with changes in system pressures and flows, creates conditions resulting in many complaints. The most typical of these changes are the drying of the system resulting in dust, the picking up of naphthalene and gum, and the increase of suspensoids caused by reversal of flow.

Almost simultaneously with our peak load of house heater starts and service requests caused by a sudden cold snap, we experienced a great increase in pilot outages, particularly on ranges and water heaters. The peak week occurred during the week ending September 27, 1947 when the telephone service bureau received approximately 17,000 service requests as compared to 2,000 for same week year before. Six thousand of this increase was for furnace starts.

At first the pilot difficulty was confined to a relatively small area but later spread over a larger territory. By pinpointing the location of pilot outages and photographing the map daily the progress of the trouble was followed. Gum trouble had not been anticipated for we had never before heard of a manufactured gas company converting to natural gas and then finding itself right in the midst of a gum problem, so when trouble first appeared we thought the "dust storm" had arrived.

Investigation showed fresh gum was being deposited in the pilots; this lasted for several months and then subsided. In the meantime, gum filters were installed in pilot lines as rapidly as possible.

In November 1947 we received about 26,000 service calls for water heaters and ranges. We discovered that approximately 60 per cent of those calls were confined to a particular area. Normally we would expect about 7,000 calls.

A possible explanation of this phenomenon may be the fact that early in 1947, just before changeover, we had occasion to use a substantial quantity of carburetted water gas and it is entirely probable that quite a bit of vapor phase

gum was laid in the system then. When the fall season came along, this gum started to decompose and was carried in the gas stream. The NO was liberated from the decomposed gum and joined with other constituents to make fresh vapor phase gum.

Since conversion a careful watch has been kept on pilot outages to detect sections of the system which may be drying to the extent that the gas stream carries suspensoids and proves a source of trouble. As such areas appeared, our chemists studied the suspensoids by the use of a portable Tyndall beam apparatus and other means. Pilot filter installations were made at time of service calls and as soon as practical the area was wet down by gravity method, using a compound sold commercially for stopping leaks at main joints. After treatment with this material the Tyndall beam checks showed immediate allaying of suspensoids and trouble cleared. During '48 and the early part of '49 the older and most troublesome areas were treated and now we experience no localized difficulty of this nature.

Another problem for consideration is the effect of substitute gas, if such is required. Here again I refer to operations in Washington because I have detailed knowledge of such an experience.

Our company redesigned the production equipment to produce a high Btu oil gas to act as a substitute for natural. In January of 1948 the supply of natural gas was curtailed due to a line break and because of the load demand created by cold weather, it became necessary to manufacture gas. When the manufactured gas was distributed, even though mixed with natural, the change in the odor was so great we received an all time high of 2500 leak orders in one week, 1500 of which were received in two days. During this period of manufacturing, pilot calls increased appreciably due to the distribution of gum in the "make" gas. This is one of the reasons we recommend consideration of the installation of gum filters on all pilots.

Manufacturing and mixing of high Btu oil gas and natural gas also presents another service problem. If a certain percentage of manufactured to the total is exceeded, the rate of flame propagation increases to the point where you may expect trouble due to the utilization of this gas in burners with port areas relatively large, designed to burn natural gas. When adjusting burners during the time high Btu oil-natural gas mixture is being used, it is highly important to instruct service personnel regarding hardness or softness of flame, so satisfactory adjustment results without a call-back when you return to normal operations.

With all these headaches you may ask,

(Continued on page 42)

Corrosion Control Byproducts

OUR corrosion control program has permitted us to adopt certain practices we would otherwise hesitate to do. In gas distribution networks which generally operate at pressures below 100 pounds per square inch, standard pipe wall thicknesses are far greater than necessary for pressure. The extra thickness is for corrosion allowance. Since our practice is to fully protect all new mains, we now specify pipe weights averaging about 20 per cent less than those for standard pipe when purchasing new pipe.

During periods of material shortages we found it necessary to build distribution systems with used pipe—some of it badly corroded. After reconditioning and coating such pipe and then applying cathodic protection to the completed system, we feel that a reasonably reliable distribution network resulted.

by R. B. Wilson, Mississippi Power & Light Co., Jackson, Miss., at annual convention, American Gas Ass'n, Atlantic City, Oct. 2-5, 1950.

Michigan Court Upholds State Control of Direct Sales

The Michigan Supreme Court in October upheld the right of the state public service commission to regulate the direct sale of natural gas by a pipe line to industry.

The ruling relates to an effort by the Panhandle Eastern Pipe Line Co. to sell gas directly to the Ford Motor Co. at its Dearborn plant.

The main Ford plant is located in a community served by the Michigan Consolidated Gas Co., a public utility which purchases a portion of its gas from the Panhandle pipe line. Michigan Consolidated had filed a complaint with the state public service commission against the invasion of its distribution territory by Panhandle.

The majority opinion of the Supreme Court said the pipe line company was seeking to "skim the cream off the local market for natural gas . . . without regard to the public convenience and necessity for natural gas by other users in the Detroit area." Said the court:

"If Panhandle is free to compete at will for such local markets, and take the cream of the business, any other utility providing the same service in the same area might be forced to obtain higher rates for its services when it must obtain its natural gas from Panhandle, and thus would face a distinct disadvantage.

"The right to sell natural gas in this State by Panhandle direct to consumers for their own use and not for resale, in a municipality where another public utility is rendering the same sort of service, is within the jurisdiction of the Michigan public service commission. Any other conclusion would allow Panhandle to engage in such business without either Federal or State control over the right to engage in such service. It has long been the general policy of the law that a public utility should be subjected to governmental control."

The case began in 1945 when Panhandle signed a contract to sell gas to Ford and announced an intention to sell directly to other industrial consumers when possible. Michigan Consolidated filed a complaint with the Michigan Public Service Commission. The commission ordered Panhandle to cease and desist from such direct sales.

Ingham County Circuit Court issued a permanent injunction against enforcement of the commission's order. This was appealed to the Supreme Court. The 5 to 3 decision said Panhandle cannot sell natural gas to Ford Motor or other local consumers for their own consumption without first obtaining a certificate of public convenience and necessity from the commission.

FPC Authorizes Hope Natural To Increase Capacity

The Federal Power Commission has authorized Hope Natural Gas Co. of Clarksburg, W. Va., to construct pipe line facilities to increase natural gas deliveries into the company's Fink storage area in Lewis County, W. Va.

The facilities, estimated to cost $790,000, include 19½ miles of 18 inch transmission line and will provide increased pipe line capacity of approximately 100 million cu. ft. of natural gas per day. The facilities will not be used to serve any new markets.

Niagara Mohawk Applies to FPC To Build Natural Gas Line

Niagara Mohawk Power Corp., of Syracuse, has applied to the Federal Power Commission for authority to construct a 55-mile transmission line to provide natural gas service to Watertown and other communities in northeastern New York State.

The proposed facilities, estimated to cost $1,991,000, would enable Niagara Mohawk to convert its present manufactured gas territory in Watertown to straight natural gas service. In addition, the company plans to provide natural gas to communities along the route of the proposed 10¾ inch line.

The application says that Niagara Mohawk has rendered manufactured gas service in Watertown at a loss for more than five years, with a loss for the 12-month period ended June 30, 1950, aggregating $140,071. The company estimates that in lieu of this loss, it will be able to earn a net operating income of $22,890 in 1952 and upward to a total of $214,000 in 1955 if the system is converted to natural gas.

New York State Natural Gas Corp. supplies Niagara Mohawk with natural gas.

GRASS ROOTS VIEW of FUTURE

Prevails at AGA Convention

AGA President Hugh H. Cuthrell, at left, greets convention speaker Dr. Harold E. Stassen

THE thirty second annual convention of the American Gas Association was held at Atlantic City, N. J., October 2 to 6. With the stated theme of "Gas—the Flame of Progress," the convention sessions developed that the gas industry has a quiet confidence concerning what will happen in the future, with the complementary note of the importance of getting more information to employees and customers. The registration according to published lists of AGA, was 5142.

For the second time since World War 2, there was an exhibit of appliances and equipment under the auspices of the Gas Appliance Manufacturers Association. There were over 200 exhibitors, the largest on record, according to GAMA.

AGA President Hugh H. Cuthrell, vice-president, Brooklyn Union Gas Co., Brooklyn, N. Y., outlined the activities of the past association year, and expressed the general spirit of the convention by saying: "The one certain economic fact is that we live in a changing world and, consequently, our business thinking must be flexible."

Mr. Cuthrell stated that the PAR plan was the industry's major effort, and that a great deal of progress had been made toward advancing the industry in the public interest. He urged continued and wider support of all promotional programs.

"We can either point to the war emergency as a prime reason for scrapping our promotional programs or we can proceed with plans which will strengthen our industry in war or in peace," he said. "I do not mean that some readjustments may not be necessary, but the root of our strategy and basis for our action should continue to be the PAR plan."

"I am alarmed to hear that some companies have cut down drastically on their advertising to such a point that they may soon find themselves with products to sell and no one inquiring about them."

Mr. Cuthrell recommended a further upgrading of appliance quality, and also an appraisal of industry man-power requirements, the end-result being to attract the young and aggressive to work out worthwhile careers in the utility business.

"We are making progress in business statesmanship and in our relation with government," Mr. Cuthrell concluded. "I hope that we will continue to create more channels of communication with our public and with government to the end that better understanding of the function of the public utility will prevail. There is a grave necessity for a better exposition of fiscal operations in utilities so that taxing will be realistic and not prohibitive of enterprise."

A feature of the opening general session of the convention was an address by Dr. Harold E. Stassen, President of the University of Pennsylvania, who said that he believed that the most likely outlook is "not the outbreak of a third world war, but rather a period of years in which there will be a clash between opposing ways of life, a period of intensified armament, and idealogical and economic struggle between hostile groups."

"And I think that that prospect presents more difficult problems for industrial policy, for governmental policy, for public policy, for labor policy than even the plunge into an all-out, clear-cut world war," Dr. Stassen continued. "For the betwixt and between, that twilight zone between peace and war, will surely bring forth a great multitude of problems related to balancing and stabilizing our economy and maintaining its long-term soundness, and stabilizing other parts of the world."

At the start of his speech Dr. Stassen made this statement: "I believe that economic freedom is inseparable from the other freedoms of a social or civil or religious or political nature and I consider further that efficient successful utilities under the management and ownership of citizens and not of government are an important bulwark for the freedom of the people of this nation."

"There never was a time when alert, well-conceived and well-carried out programs of fundamental information for employees is more important than right now in this twilight zone between peace and war and the rearming of our country," Dr. Stassen said.

"Here is a chance with the very best atmosphere of necessity to talk to them about the way in which our needed expansion is being carried forward under a capitalistic system in part by reserves

AMONG THOSE PRESENT

Top left—left to right: W. H. Kussmaul, Hammond, Ind.; Paul R. Taylor, New York; L. B. Smith, Auburn, Ind.

Top right—left to right: A. F. Bridge, Los Angeles; N. Henry Gellert, Seattle; F. M. Banks, Los Angeles.

Top center—left to right: E. J. Murphy, Brooklyn; E. G. Boyer, Philadelphia.

Left to right: E. W. Doebler, Mineola, N. Y.; Ernest R. Acker, Poughkeepsie; E. F. Barrett, AGA treasurer, Mineola.

Left to right: O. H. Ritenour, Washington, D. C.; E. D. Bivens, New York; S. M. Crocker, New York; L. V. Watkins, New York.

Left to right: Stanley H. Hobson, GAMA President, Rockford, Ill.; W. L. Hayes, Minneapolis; H. G. Smith, Toronto; Emil Biard, France.

Left to right: C. S. Hazel, Philadelphia; John Overbeck, Columbus; A. B. Lauderbaugh, Pittsburgh; J. L. Coyne, Rochester; Professor Amos E. Neyhart, State College, Pa.; Jesse S. Yeaw, Rochester.

Left to right: Charles E. Bennett, Pittsburgh; C. H. Waring, Kansas City; Thomas Weir, Windsor, Ontario; P. W. Geldard, Toronto.

built up from past profits and in part from funds obtained from the floating of securities, and from funds drawn from some of the great insurance pools of capital under our private capitalistic system.

"Here is the time to translate into terms of their service in their communities the basic facts of the capitalistic system and relate it to this very interesting matter of fundamental rearmament and the defense of their way of life.

"Do your employees know for example, that they have to work less than one-third as long to buy shoes for their children, to buy shelter for their families, to buy clothes for their families than do the workers in the gas industry of the socialist countries of the world, and less than one-eighth as long as those in the totalitarian countries in the gas industry? Do they know that other workmen, such as carpenters, bricklayers, machinists, in these other countries have to work one-sixth as long to heat their houses with gas, than do the workers in similar occupations to pay for their gas in the totalitarian and socialist countries?

"The basic facts of the functioning of the individual capitalistic mind such as we have in America, related to the direct expansion of production, of energy and service to this great nation in time of trial will determine in the long pull the public opinion that will relate itself very directly and favorably to the future course of both political parties in their fundamental decisions on the future of America.

"I am confident of victory for the forces of freedom and I am confident that the utilities of America will do their full part and more toward that victory.

"I say that if American industry intelligently, honestly and fairly—never with a propaganda twist—but in plain language from the facts passes the word about the fundamentals of the American

capitalistic system and what it means to all men in their individual freedom, there will be no question of victory, no matter whatever challenge comes to us. And even more—there will be a basis for our children of individual freedom and the dignity of man."

Arch N. Booth, executive vice-president of the Chamber of Commerce of the United States, also stressed the importance of "a thorough going program of public relations and human relations in your own business concern."

"You can take the wind out of the sails of those who are criticising business and the American economic system," Mr. Booth said. "To your employees and the public, you are Mr. Private enterprise.

"You will do much to help win the battle against socialism, if you tell the facts of life about business and about the business system to your employees. The principal requirement is that you make certain you are using real, honest, understandable facts, and the bees-and-flowers platitudes.

"You will be amazed at how new and interesting some of these things can be to workers. And you will be amazed, too, at how you can *clear up misunderstandings and wrong assumptions.*

"Telling employees what makes the business system tick is not a difficult task, but I sincerely believe that it is one of the most important obligations which confronts everyone in business today."

In a paper entitled, "Spike Driving with a Tack Hammer," Stanley H. Hobson, retiring President of Gas Appliance Manufacturers Ass'n, and President of Geo. D. Roper Corp., Rockford, Ill., made a plea for "fresh, crisp thinking."

He paid tribute to the 25th anniversary of the AGA Testing Laboratories, and to the work that has been accomplished in the testing and approving of gas appliances. Mr. Hobson also pointed out that the single point ignition field testing program is of prime importance to the gas utilities.

Left to right: E. G. Campbell, Chicago; AGA President Hugh H. Cuthrell, Brooklyn; Wallace G. Strathern, Boston; Major Alexander Forward, New York; Robert W. Hendee, Colorado Springs.

In discussing the gas range and its future, Mr. Hobson asked this question: "How much are you really willing to spend to protect an investment of approximately $7,900,000,000, with revenues of $1,694,331,000 or approximately $47 a year per residential customer, and out of that amount approximately $32 a year from gas ranges, based on 1949 figures?"

Mr. Hobson made a strong plea for a more intensive program of publicity. He said:

"How much have you read about the phenomenal growth of natural gas? How much have you read about the romance of this industry? How much have you read about certain important people who have had so much to do with this great service to the American Public? How much have you read about its miles of pipe line and how it compares to the railroad tracks laid north, east, west, and south in this country? How much have you read about the allied industries that make pipe lines, products, and service possible? How much have you read about the dependable qualities of its service? How much have you read about how it finds its way into the home? How much have you read about the investment in this industry as related to others?

"And so the story goes! That is what I mean we lack when I say there is no money being spent for *publicity*."

Major Alexander Forward, retired managing director of the American Gas Association, presented the gold medal of the British Institute of Gas Engineers to Robert W. Hendee, of Colorado Springs.

The award was for the best paper given at last year's meeting of the Institute.

James K. Polk, of the legal firm, Whitman, Ransom, Coulson & Goetz, New York, told the general sessions of the convention that it is becoming increas-

Bottom left—left to right: E. G. Campbell, Chicago; and R. Van Vliet, Staten Island.
Bottom right—left to right: Frank T. Rainey, Knoxville; and J. E. Coleman, Pittsburgh.

Top left—left to right: Pat H. Miller, Shreveport; H. R. Batchelder, Louisiana, Mo.; E. C. Brenner, Milwaukee; Baxter Wilson, Jackson, Miss.; R. H. Bussard, Washington, D. C.
Top right—left to right: Ronald A. Malony, Bridgeport; B. T. Franck, Milwaukee; Leon Ourusoff, Washington, D. C.; Carl H. Lekberg, Hammond, Ind.

Exhibition of gas appliances and equipment was largest on record.

Introducing natural gas—Members of the panel discussion are, left to right, Dudley B. W. Brown, Howard B. Noyes, Irving K. Peck, Robert W. Otto, and Harry K. Wrench.

ingly apparent that the unlimited expansion of social security programs is more than can be borne by any economy. He said that existing social security programs cost in excess of 8½ per cent of the total wage and salary payments and may well be expected to increase under forseeable expansions to approximately 30 per cent.

Mr. Polk suggested that job securities be related to job revenues and matters affecting the labor market. Public health, maternal and child welfare, etc., are a charge on the over all economy, and do not relate to salary and wage earners alone.

"The necessity and cost of the job security should be weighed in the light of the wage aggregate and the labor market," he said, "while the necessity and cost of non-job securities should be evaluated and related to the economy of the entire nation."

Mr. Polk also suggested that consideration be given to elective and incentive work continuance beyond age 65.

The economic, social, and political aspects of a 65-year old retirement policy were discussed by Dr. John J. Wittmer, vice-president, Consolidated Edison Co. of N. Y. He maintained that by retiring men arbitrarily at 65, industry is in many cases discarding skill and experience which could very well be used. He pointed out that industrial surveys have shown that older men have fewer accidents than younger men, have fewer absences, and are generally more loyal and are very often more skilled and better producers than the younger workers.

Dr. Wittmer said that 32 per cent of the eligible voters are elderly people and that by 1980 this number will soar to 42 per cent. "Unless private industry provides adequately for their wants by continued and enlarged work opportunities," he continued, "we may see a great tide of 'Ham 'n Egg' clubs which will vote themselves exorbitant pensions from the public till with no thought for future consequences. The gouge such plans could put in our economy is frightening to consider."

The remedy suggested by Dr. Wittmer involves the setting up by each company of a permanent retirement panel which would consider each employee reaching retirement age as a special and individual case.

One of the most popular features of the convention was the joint session of the Natural Gas Department and the Manufactured Gas Department. D. A. Hulcy, of Dallas, and George F. Mitchell, of Chicago, chairmen of the respective departments, presided.

Irving K. Peck, of Pittsburgh, acted as moderator of a panel discussion of the "Problems of Management Connected with Introducing Natural Gas into Manufactured Gas Systems." The panel members were:

Dudley B. W. Brown, Milwaukee; Howard B. Noyes, Washington, D. C.; Robert W. Otto, St. Louis; and Harry K. Wrench, Minneapolis.

Mr. Otto answered the question about the formulation of a general overall publicity and public relations program for a changeover. He said that when his company made its first conversion to an 800 Btu mixed gas, there was no concerted public relations plan. Effort was directed toward technical training.

However, when the conversion to natural gas took place, there was a specific program of education, involving employees, customers and the general public. Newspaper, direct mail, and hand bill advertising was used. Representatives of all the newspapers were seen, and key municipal authorities, including police and fire departments, and various clubs and civic organizations were informed in detail of what the conversion meant and how it was to be done. A series of meetings proved very successful. A comprehensive conversion manual was prepared, and all telephone clerks and contact employees were kept posted about progress and developments on a day to day basis.

The question about comparative costs of catalytically reformed natural gas and thermally reformed natural gas was referred to Mr. Noyes. He said that it depended to a large extent on the respective costs of natural gas and solid fuels. With the catalytic process there is no trouble with gum in the distribution system.

In answering the question about the per cent of standby desirable for a company serving straight natural gas, Mr. Brown said a great deal depended on local conditions, such as reliability of supply (one or more pipe lines serving the company) the amount of interruptible load, etc. He said he could give no exact formula, but suggested that as much standby be retained as possible. With his company the figure is 80 per cent.

Mr. Wrench suggested that sufficient standby be maintained to care for all the domestic and small commercial load.

Another question asked was is it necessary to retain the same holder capacity ratio to sendout as with a lower Btu gas? Mr. Wrench said that it is impractical to do so because of the growth in load with natural gas. He said that his company had 9,000,000 cu. ft. holder capacity with a sendout of 20,000,000 cu. ft. of manufactured gas, and now still has 9,000,000 cu. ft. holder capacity with a sendout of 125,000,000 cu. ft. of natural gas.

The operating practice of odorizing was recommended by the panel. One question asked if the changeover from manufactured to natural gas can be done in two steps—a major change from 530 Btu to 800 Btu, and then a minor change to straight natural. It was the consensus that this was good practice.

The panel also recommended the setting up of an emergency organization which would be properly trained to handle curtailment situations, when, as, and if they arise.

Regarding interruptible load, the panel agreed that the type of load most desirable would depend almost entirely on local conditions—that is, what is available.

It was decided that the way to limit a runaway house heating demand was by a public service commission order specifying restrictions.

Mr. Noyes stressed the advantages of turning to the therm form of rate *before* the introduction of natural gas. Disadvantages of the therm rate were given as, 1, it is a change from a practice customers have been familiar with for a long time, and, 2, the billing is more complicated.

Another question asked was whether an increase in return should be allowed the gas company before any reduction in rates. The answer was that an initial reduction would probably be necessary, as the general public would find it difficult to understand why the introduction of natural gas brought no reduction in rates. Also on the subject of rates, the caution was expressed about making too great a reduction in house heating rates.

Mr. Noyes suggested feeling out the house heating market. He said that in Washington there was a rate of 11 cents a therm, and a house heating saturation of 40 per cent.

Mr. Wrench said that in Minneapolis the domestic and house heating rate was the same—66 cents per Mcf—and there was a house heating saturation of 90 per cent.

The total recoverable supply of natural gas in the United States was estimated at better than 500 trillion cu. ft., or more than three times the present known reserves, by Lyon F. Terry, vice-president of the Chase National Bank of New York.

Based on the reserves discovered to date in a 100 square mile area of the Gulf Coast tidelands, Mr. Terry estimated total reserves in these off-shore lands at 50 trillion cu. ft.

Poor load factor means high rates, according to Franklin T. Rainey, vice-president of East Tennessee Natural Gas Co., Knoxville, in discussing the importance of a large industrial load. He said that an aggressive industrial sales program would, 1—improve the economic

They Take Over

The new AGA President, D. A. Hulcy, at right, chats with the new first vice-president, George F. Mitchell.

AGA OFFICERS ELECTED FOR 1950-1951

PRESIDENT—D. A. Hulcy, President, Lone Star Gas Co., Dallas
FIRST VICE-PRESIDENT—George F. Mitchell, President, The Peoples Gas Light & Coke Co., Chicago
SECOND VICE-PRESIDENT—C. E. Bennett, President, The Manufacturers Light & Heat Co. Pittsburgh
TREASURER—Edward F. Barrett, President, Long Island Lighting Co., Mineola, N. Y.

DIRECTORS:

A. M. Beebee, President, Rochester Gas & Electric Corp., Rochester
N. B. Bertolette, President, The Hartford Gas Co., Hartford
L. B. Bonnett, vice-president, Consolidated Edison Co. of New York
E. J. Boothby, President, Washington Gas Light Co., Washington, D. C.
A. W. Conover, President, Equitable Gas Co., Pittsburgh
Henry Fink, President, Michigan Consolidated Gas Co., Detroit
John L. Haley, vice-president, Niagara Mohawk Power Corp., Syracuse
Lyle C. Harvey, President & general manager, Affiliated Gas Equipment, Inc., Cleveland
Frederick O. Hess, President, Selas Corp. of America, Philadelphia
Robert A. Hornby, executive vice-president, Pacific Lighting Corp., San Francisco
Robert W. Otto, President, The Laclede Gas Co., St. Louis
Frank C. Smith, President, Houston Natural Gas Corp., Houston
R. G. Taber, President, Atlanta Gas Light Co., Atlanta
Allyn C. Taylor, President, Consumers Gas Co., Reading, Pa.
Charles G. Young, vice-president, Springfield Gas Light Co., Springfield, Mass.

AGA SECTION OFFICERS ELECTED

Accounting Section
- Chairman—Alan A. Cullman, Columbia Engineering Corp., New York
- Vice-chairman—Ralph F. McGlone, The East Ohio Gas Co., Cleveland

Industrial and Commercial Gas Section
- Chairman—Carl H. Lekberg, Northern Indiana Public Service Co., Hammond, Ind.
- Vice-chairman—Ronald A. Malony, executive vice-president, The Bridgeport Gas Light Co., Bridgeport, Conn.

Manufacturers' Section
- Chairman—W. Reed Morris, Koppers Co., Inc., New York

Residential Gas Section
- Chairman—Carl H. Horne, vice-president, Alabama Gas Corp., Birmingham
- Vice-chairman—W. J. Schmidt, Long Island Lighting Co., Mineola, N. Y.

Operating Section
- Chairman—R. Van Vliet, New York & Richmond Gas Co., Staten Island, N. Y.
- Vice-chairman—H. Bruce Anderson, vice-president, The Philadelphia Gas Works Co., Philadelphia

Laboratories Managing Committee
- Chairman—Arthur F. Bridge, President and general manager, Southern Counties Gas Co., Los Angeles
- Vice-chairman—C. E. Bennett, President, The Manufacturers Light & Heat Co., Pittsburgh

Publicity and Advertising Committee
- Chairman—Charles J. Allen, vice-president, The Connecticut Light & Power Co., Waterbury
- Vice-chairman—Howard A. Praeger, The Brooklyn Union Gas Co., Brooklyn

conditions of the community served, 2—help maintain and keep to a minimum any increase in domestic and commercial rates, and 3—maintain and insure an expanding market in all fields of gas sales.

Joseph Bowes, President, Oklahoma Natural Gas Co., Tulsa, discussed the industrial load in terms of "Factors Affecting the Location of Industry." He said the gas company has a vital stake in the industrialization of the area it serves.

"It means growth and prosperity for our cities," he continued. "It not only means more industrial load, it also means increased commercial and residential business, which is perhaps more important than the fuel consumed directly by industry. Most of all, it offers an opportunity for leadership in our communities, an opportunity to win the respect and good will of our fellow citizens by providing the kind of intelligent leadership that is needed to secure the industrialization of the cities and towns we serve."

The paper, "Who Is Winning the Commercial Fight," by John J. Bourke, of AGA, was read by Leon Ourusoff, Washington Gas Light Co. It gave the status of gas fuel in the commercial market, and described the promotional efforts of the gas and electric industries.

"Leveling Hills and Valleys Is in the Public Interest" was the title of a paper at general sessions by James F. Oates, Jr., chairman of the board of The Peoples Gas Light and Coke Co., Chicago. In part he said:

"Sales of gas to interruptible and off-peak users tend to fill in the general firm demand and are therefore unquestionably of high desirability. Such sales help to build up the load factor on the utility company system and they serve to increase revenues and decrease the cost per unit of sale to the firm domestic consumer. This has the effect of making possible lower rates for general customers and avoiding increases in firm rates which might otherwise have to take place to compensate for higher costs being experienced by utility companies in common with the rest of the business units of our economy."

In discussing the demand for house heating, Mr. Oates said:

"This demand has been aggravated by the current relatively low gas rates as compared with the higher costs of competitive fuels. Many companies have been required to appeal to state utility commissions for orders limiting and prohibiting the acceptance of additional space heating customers. Such orders are required in the public interest to avoid the serious consequences of curtailment of send-out to the great body of general domestic customers and to avoid the shutdown of industry which depends upon gas. But the situation is

Left—Joseph Bowes, Tulsa, and right, Frederick O. Hess, Philadelphia.

obviously unsound. It is an industry nightmare. We cannot long deny to the public the service which it demands. The situation cannot be tolerated. It must and will be solved but its solution is not easy. Unless it is solved by the utilities, the public will be served and they will turn elsewhere for help. It is not difficult to guess where they will turn."

Regardless of the availability of ample quantities of natural gas, it is certain that in the near future all coke ovens will be operated at maximum capacity, according to W. Reed Morris, Koppers Co. Inc., who spoke at the operating section. An unbiased review will show the companies which continue to operate coke plants or keep an available supply of coke oven gas are in the more fortunate position, he said.

"Selling" Is Public Service

The re-establishment of aggressive sales departments employing large numbers of house to house canvassing salesmen was urged by W. L. Hayes, general sales manager, Montana-Dakota Utilities Co., Minneapolis. He stated that he was heartily in favor of gas appliance dealers "as an adjunct to the industry sales effort, but that the dealer cannot and is not doing the selling job alone." He said that there was evidence to prove that appliance dealers sell more appliances when the gas companies are aggressively merchandising than they do when the gas company is out of the merchandising business.

"Opportunities for service within the gas industry are monumental and constitute far more than mere commercial advantage or financial possibilities," said W. Paul Jones, President, Servel, Inc., Evansville, Ind., at a general session of the convention. "We can do the basic things for people that they cannot do for themselves. We can bring fundamental services that are basic necessities in the modern pattern of life.

"Should we not therefore, promote our business assiduously? Should we not sell our ideas and our commodity aggressively so that we may be of the greatest possible service to the greatest possible number of people?

"House heating load is indeed a wonderful revenue producer, and a marvellous advertisement to the public at large.

"But—is it not possible to secure commission approvals for handling house heating installations sales on a more logical and business-like basis than the mass stampede now so common? Could we not do a more effective job of balancing load factor, which, after all, is in the public interest, by pursuing a more realistic selection and selling program of house heating prospects? Today, all-year air conditioning with summer cooling as well as winter heating can be sold to many house heating prospects, particularly in the new home field."

The gas industry must step up its sales technique to new high levels, according to Frank C. Smith, President, Houston Natural Gas Corp. He asked for closer cooperation between gas companies and appliance manufacturers.

Mr. Smith also said that in his opinion any slackening in the amount of advertising being done by the industry would be a great mistake.

"Spotlight on Sales" by W. Paul Jones, Evansville, and "Dynamics of Sales Leadership," by Fen K. Doscher, vice-president, Lily Tulip Cup Corp., were inspirational talks on the future sales possibilities as well as obligations of the industry.

There were several skits and dramatic presentations at the convention sessions. One described the AGA promotion program for 1950, and others were devoted to various appliances, such as the clothes dryer, incinerator, etc.

There was also a dramatic presentation by F. A. Kaiser, Detroit Michigan Stove Co., showing figures on the advantages of gas in commercial cooking. In introducing this demonstration Leon Ourossoff, Washington, D. C. said it had been developed for meetings of hotel and restaurant operators to offset the propaganda of competing fuels.

Frederic O. Hess, President, Selas Corp. of America, Philadelphia, spoke at the Industrial and Commercial Gas Section session on the subject "Equipment Performance and Fuel Cost in Our Industrial Economy." Excerpts from this paper appear on page 36 of this issue of AMERICAN GAS JOURNAL.

Methods of improving human relations between plant and office employees were outlined by Wallace G. Strathern,

director of training, Eastern Gas & Fuel Associates, Boston.

Dr. J. L. Rosenstein, Lyola University, Chicago, spoke on "If Salesmen Could Choose Their Sales Managers." He pointed out that sales managers must know how to deal with their men, and that all men are not alike. He asked for a policy of "man maintenance," and urged "giving a man the same treatment you give a piece of metal."

Policies of charging customers for work done in the home and changes encountered in conversion to natural gas were covered by H. C. Smith, The Peoples Gas Light & Coke Co., Chicago, in a paper developed from a questionnaire sent to 54 companies.

Highlights of the charging-for-service situation were given as follows:

Installation of service line from curb to premise—21 companies charge; 29 companies "no charge."

Installing meter—0 companies charge; 54 companies "no charge."

Reestablishing service after non-payment shut off—32 companies charge; 22 companies "no charge."

Changing location of meter because present location has become undesirable, unsafe, and against city code—25 companies charge; 23 companies "no charge."

Lighting central heating plant—13 companies charge; 39 companies "no charge."

Shut off central heating plant—9 companies charge; 44 companies "no charge."

Connecting gas appliances—31 companies charge; 1 company "no charge."

Mr. Smith reported the following answers to the question: What was customer attitude on conversion to natural gas? Twenty-two reported "favorable," one reported "uninterested," and none reported "unfavorable."

In discussing collection policies, C. L. Havener, Consolidated Edison Co. of N. Y. stressed the value of a personal call on the chronic delinquents. He said that the gas company should try to develop a customer understanding as to when and how bills are made up and when payment is expected.

"Odd" job assignments for customer contact employees whose regular work is subject to unavoidable "ebb and flow" in customer traffic was discussed by George E. Curtis, Boston Consolidated Gas Co.

Two points were brought out as a result of a questionnaire:

1. In developing job classifications particular care should be given so that the individual job will not be defined in such detail that it will not be possible to make "odd" job assignments of work of the same level requirements.

2. "Odd" job assignments should be

(Continued on page 48)

GAMA Installs Its Officers at Atlantic City

Recently elected officers and division chairman of the Gas Appliance Manufacturers Association for 1950-51 were inducted at a board of directors' meeting at Atlantic City on Oct. 2.

The officers, headed by Frederic O. Hess, President of Selas Corp. of America, Philadelphia, serve from October 1, 1950 to October 1, 1951. They were elected at the 15th annual meeting of GAMA at White Sulphur Springs, Va., in May.

Mr. Hess, who was first vice-president of the association, succeeds Stanley H. Hobson, of Rockford, Ill., President of Geo. D. Roper Corp. as President of GAMA.

Others taking office were: Louis Ruthenburg, chairman of the board, Servel, Inc., Evansville, Ind.,—first vice-president; A. B. Ritzenthaler, vice-president, Tappan Stove Co., Mansfield, O.—second vice-president; Lyle C. Harvey, President, Bryant Heater Division, Affiliated Gas Equipment, Cleveland—treasurer; and H. Leigh Whitelaw, New York,—secretary.

Largest Wassail Held by Suppler's Gild

Breaking all records for attendance and enthusiasm, 365 Supplers and Burghers gathered in Atlantic City on Oct. 2 at the Hotel Madison for the annual Wassail of the Gild of Ancient Supplers of Gas Appliances, Skills, Gins, Accessories and Substances. Conducted on a basis of "by invitation only," this informal buffet supper brings together gas company executives and Supplers, the latter being men who for at least 10 years have been suppliers of appliances, services, equipment, and materials.

The Wassail is the culmination of the Gild year and is always held on the first evening of the AGA convention.

The pattern of the ancient Gild was chosen as affording the best symbolism expressive of loyalty to craft, worthiness of membership, dignity of years of service; by its ancient form and ritual the Gild provides, in a modern age, opportunity for entertainment and pleasure without detracting from serious and idealistic purposes.

Present officers of the Gild are:

Mayor—E. Carl Sorby, Geo. D. Roper Corp., Rockford, Ill.; Senior Warden—George P. Velte, American Stove Co., Long Island City; Clerk—William G. Hamilton, Jr., American Meter Co., Philadelphia; Keeper of the Treasure—Glenn H. Niles, Ridgewood, N. J.; Sergeant-at-Arms—Wilson J. Kite, Jr., Barrett Division, Allied Chemical & Dye Corp., New York.

Left to right—A. E. Higgins, Bloomfield, N. J.; Louis Ruthenburg, Evansville; Davis DeBard, New York; C. Edwin Bartlett, Philadelphia.

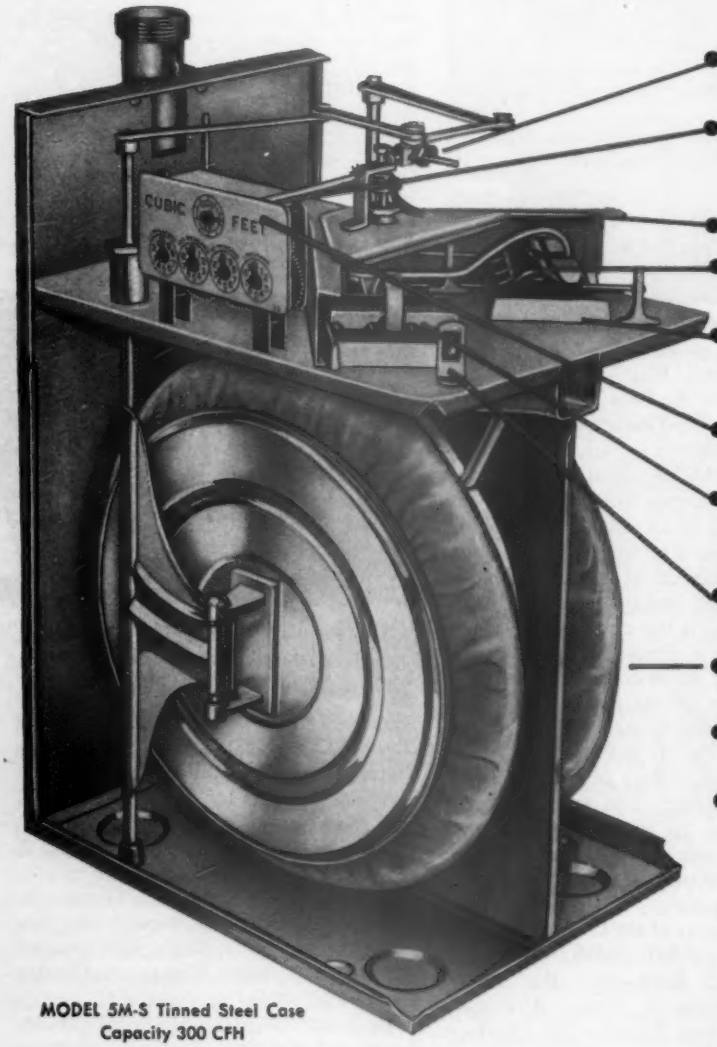
Mayors All—from left to right, Messrs. Guitteau, Bartlett, Mulcare and Sorby.

Aldermen are: Joseph A. Messenger, Buell Engineering Co., New York; Stephen D. Day, S. D. Day Co., Houston; and Wayne R. Smith, Continental Water Heater Co., Glendale, Calif.

Regional Wardens are: Joseph H. Lewis, Grayson Heat Control, Ltd., Lynwood, Calif.; C. D. Lyford, Minneapolis-Honeywell Regulator Co., Minneapolis; Carl Liden, Ohio Foundry & Mfg. Co., Fentress, Tex.; David S. Sharpe, Geo. D. Roper Corp., Atlanta; John K. Busch. Geo. D. Roper Corp., Grosse Pointe, Mich.; Frank H. Post, Robertshaw-Fulton Controls Co., Youngwood, Pa.; Sol W. Weill, Geo. D. Roper Corp., Philadelphia; Alvin M. Stock, New York; Russell B. Wright, Hardwick Stove Co., Boston; and Paul C. Kreuch, Pittsburgh Equitable Meter Div., Rockwell Mfg. Co., Chicago.

Past mayors of the Gild are: William S. Guitteau, American Meter Co., Fort Lauderdale, Fla.; C. Edwin Bartlett, Ruud Mfg. Co., Philadelphia; and Joe A. Mulcare, Mulcare Engineering Co., New York.

AMERICAN METER



MODEL 5M-S Tinned Steel Case
Capacity 300 CFH

- **FIRST** with adjustable tangent permitting minor adjustments to be made with nuts and set screws.
- **FIRST** with Silent Reverse Stop, which is noiseless, self-cleaning and eliminates shock or damage to meter.
- **FIRST** with two-piece valve box cover and frame.
- **FIRST** with Bakelite Valve Cover, which has eliminated noisy valve action under dry gas conditions.
- **FIRST** with cast-in valve seat assembly, which automatically insures correct crank bearing and valve seat relationship.
- **FIRST** with Soldered Seal Index Box, which has provided a permanently gas-tight index glass mounting.
- **FIRST** with smooth sliding Bakelite Valve Covers whose novel design practically eliminates valve noise in thousands of meters now in use.
- **FIRST** with Bakelite Valve Guides, which have improved silent guide wire action.
- **FIRST** with increased capacity without increasing size of case.
- **FIRST** with Baffle Tube Screw, which has prevented meter tampering.
- **FIRST** with bushings at critical bearing points.

SELF-LUBRICATING BEARINGS

The American Meter Company has been equipping some of its large Ironcase Meters with self-lubricating bronze bearings since 1928.

Twelve years of experience has proven the superiority of this type bearing material for gas meter use. The necessary tooling is now being installed to manufacture this advance design bearing for all types and sizes of American Meters.

This year American Meter Company is celebrating its 114th year of service to the Gas Industry.

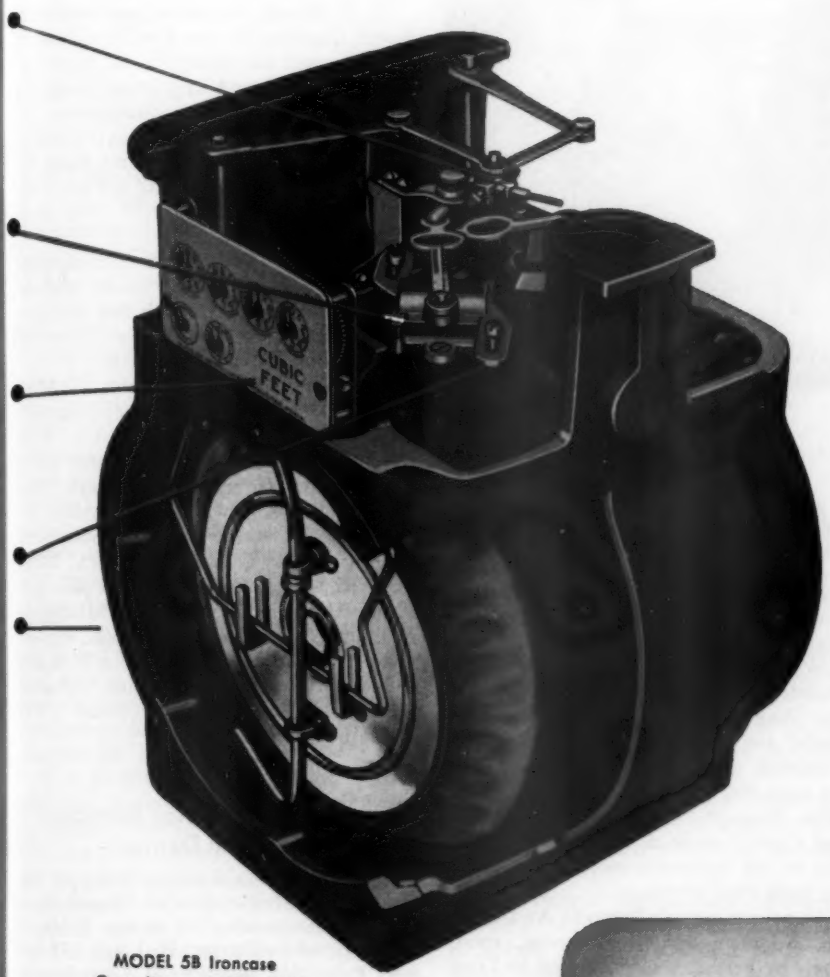
First in age and experience, it has devoted more than a century to an uninterrupted research program devoted to meter design, engineering and construction.

Its service record is the record of constant improvement in design, dependability and accuracy which has brought the "Glover full-bellows two-diaphragm slide-valve meter" to its present high standards of performance.

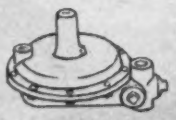
Improvements shown here resulted from this research program, and were first made available to the Gas Industry in American Tinned Steelcase and Ironcase Meters.

The know-how and experience that have made American Tinned Steelcase and Ironcase Meters leaders for more than 100 years makes them unequaled in design today. That's why they provide the practical standardization, uniform shop practice and simplicity of servicing so important to the Gas Industry. That's why they truly reflect the American Meter Company tradition of "*sustained accuracy at lower cost.*" Write for Bulletins TG-4 showing Tinned Steelcase Meters and EG-40 showing Ironcase Meters.

FIRSTS IN MODERN DISPLACEMENT METER IMPROVEMENTS

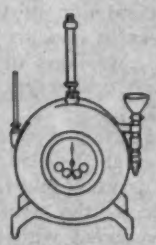


MODEL 5B Ironcase
Capacity up to 370 CFH

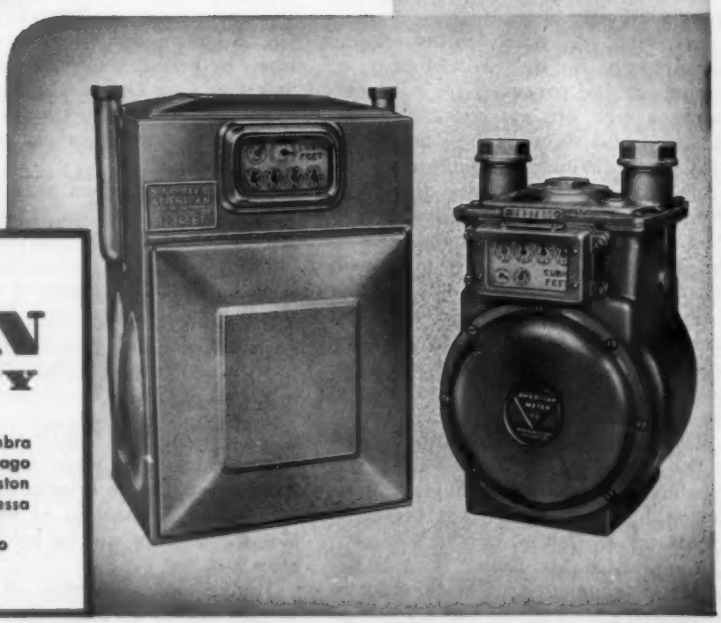


RELIANCE
HOUSE-TYPE REGULATORS
(Write for Regulator Catalog)

METER PROVERS
(Write for Bulletin AG-1)



WET and DRY TEST METERS
(Write for Bulletin AG-3)



AMERICAN
METER COMPANY
INCORPORATED (ESTABLISHED 1836)

60 East 42nd Street • New York 17, N. Y. • Albany • Alhambra
Atlanta • Baltimore • Birmingham • Boston • Chicago
Dallas • Denver • Erie • Fort Lauderdale • Houston
Joliet • Kansas City • Los Angeles • Minneapolis • Odessa
Philadelphia • Pittsburgh • San Francisco • Tulsa
In Canada—Canadian Meter Co., Ltd., Hamilton, Ontario

Mr. Hall Mr. Dalton Mr. Mosteller

Hall, Dalton, Mosteller Win Top AGA Awards

THE presentation of the regular annual awards and prizes on Tuesday October 3, was one of the highlights of the AGA convention sessions at Atlantic City.

Edwin L. Hall, director of the AGA laboratories at Cleveland and Los Angeles, and assistant managing director of AGA, received the highest honor when he was presented with the AGA Distinguished Service Award for having made the most outstanding individual contribution toward the advancement of the gas industry.

Mr. Hall was cited for his original contribution in the development of equipment and processes for manufacturing a high Btu gas and for his extensive participation in the work of the association. While coordinator of gas production research under the AGA Promotion, Advertising and Research Plan, Mr. Hall developed and gave to the industry a new process for manufacturing a gas of high Btu content from inexpensive, low-grade oils. This process enabled manufactured gas companies to increase production and effect savings of as much as 30 per cent in the cost of manufacturing gas.

The Meritorious Service Award, given to the person performing the most outstanding act of heroism in the gas industry during the year, was presented to Martin J. Dalton, of the Brooklyn Union Gas Co. Mr. Dalton received the honor in recognition of his bravery in endangering his own life and of his presence of mind in helping rescue a fellow worker who had been buried beneath an avalanche of sliding coke.

W. C. Mosteller, assistant to the vice-president, Southern Counties Gas Co., Los Angeles, was awarded the Beal Medal for contributing the best paper presented at an AGA meeting during the year. His paper, "Transmission Line Type Storage—Capacity Calculations and Costs," made a valuable contribution to the industry's methods of meeting peak load problems.

The third annual Progress Award for Gas Summer Air Conditioning, sponsored by Servel, was presented to Lone Star Gas Co., Dallas, for having made the greatest contribution during the year to the advancement of gas summer air conditioning.

Five gas utility men were announced as winners of the Gas House Heating Award sponsored by Coroaire Heater Corp.

A. G. Bur, sales manager of Wisconsin Public Service Corp., Green Bay, Wisconsin, was awarded the first prize of $500 for the development of a sales and promotional program for gas house heating sales.

Second prize of $250 went to Robert H. Lewis, advertising manager, Washington Gas Light Co., Washington, D. C., for an advertising and promotional program to further consumer sales.

E. E. Boegli, industrial gas engineer, South Carolina Power Co., Charleston, was awarded the third prize of $150 for an educational and upgrading program covering house heating installations.

E. R. Rothert, vice-president, Cincinnati Gas & Electric Co., and Earl E. Garrison, Oklahoma Natural Gas Co., Tulsa, were awarded fourth and fifth prizes respectively.

Outstanding individual accomplishments in the gas utility home service field were recognized when five winners of the AGA Home Service Achievement Award were announced.

The honors were awarded to Miss Mary E. Huck, general home service director, The Ohio Fuel Gas Co., Columbus; Mrs. Jane S. Ashby, home service director, Council Bluffs Gas Co., Council Bluffs, Iowa; Miss Maxine V. Howe, home service staff aide, Southern California Gas Co., Los Angeles; Miss Mildred M. Endner, home service advisor, Minneapolis Gas Co., Minneapolis; and Miss Violet R. Radman, supervisor in home service, Northern Indiana Public Service Co., South Bend, Indiana.

Each of the winners received $200 and a bronze plaque.

COMING EVENTS—1951

Announcements were made at the AGA convention in Atlantic City that:

The annual meeting of the Natural Gas Department will be held at Dallas May 7-8.

The annual convention of the AGA will be held at St. Louis, October 15-18.

Rocky Mt. Ass'n Has Birthday Dinner in Denver

The annual anniversary banquet of the Rocky Mountain Gas Association was held September 18 at the Shirley-Savoy Hotel in Denver. H. Leigh Whitelaw, managing director of Gas Appliance Manufacturers Association, was the principal speaker before several hundred gas appliance manufacturers and dealers and associated engineering and contracting representatives.

RMGA was organized in 1943 by a group of heating and plumbing contractors, dealers, and utility representatives with the objective of bringing about more consideration of the problem of burning natural gas at altitudes of 4,000 ft. or more above sea level in a manner to give better service to customers and to provide a more dependable performance rating.

Among those present were S. J. Neely, President, F. T. Parks, vice-president, Roy G. Munroe, Secretary-treasurer, and officials from the Colorado Master Plumbers Association, the Denver Retail Merchants Association, the American Society of Heating and Ventilating Engineers, and the local plumbers' union.

Sellers May Recover Expected Profits In Breach of Contract Cases

by Leo T. Parker

Attorney at Law, Cincinnati

LEADING legal questions are often asked by contractors and sellers of gas appliances and equipment and managers of sales departments operated by gas corporations.

Here is question No. 1: "If a property owner signs a contract with a contractor for installation of gas equipment, can the contractor recover damages if the property owner rescinds the contract?" Other readers of AMERICAN GAS JOURNAL asked these questions: "If a property owner breaches an installation contract, how much damages may the contractor receive? If the property owner denies that he signed the installation contract, what legal procedure is proper for the contractor?"

The answers to these legal questions are found in a late higher court decision and should assist all sellers, contractors, and distributors of gas appliances and equipment to win unavoidable suits of this nature.

If a property owner breaches a contract for installation of gas equipment, the seller, contractor or gas corporation may sue the property owner and recover the anticipated profits which would have been earned on completion of the contract. If the property owner claims that he did not make or sign the contract, the jury will consider all testimony and render its opinion accordingly.

For illustration, in Krumholz v. Rusak, 41 N. W. (2d) 177, the testimony showed facts, as follows: A distributor of gas heaters, appliances, etc., named Krumholz visited one Rusak at her home to discuss the sale of gas heating equipment which he had heard she was planning to buy. She told him she was in the market for automatic heat for apartments she owned next door to her home. He looked over the building, which contained a store on the first floor and two apartments upstairs, for which the heat was to be supplied. He made the necessary measurements and checked the radiation in order to quote Rusak a price.

One evening he called on Rusak at her home and told her that he would deliver the hot water boilers and conversion burners and would commence installation as soon as they received the gas company's OK to go ahead. Rusak thought that the price was a little high, so Krumholz agreed to reduce it by $20 for cash if she would pay the contract price as soon as the job was finished.

Krumholz drew up a contract order blank which he testified that Rusak signed in the presence of her husband. However, Rusak contended that she did *not* sign the order blank because she did not know "what day he is going to put it in the gas," and, furthermore, being unable to write, that she usually signed her name with an "X." When her husband came to testify, he stated that he was the one who signed the order blank and that he did so without her authorization or consent.

Later Rusak refused to allow Krumholz to install the gas heating equipment, and Krumholz sued to recover the profit he would have earned on the job had Rusak not rescinded the contract.

Rusak defended the suit by testifying that she did not sign the contract but her husband signed it without her consent.

Nevertheless, the jury considered all testimony and held Rusak liable to Krumholz for $840.00, the profit he would have earned had Rusak not rescinded the contract. The court said:

"There was ample evidence to support the jury in finding that defendant (Rusak) signed her name to the order blank or that her husband did so with her authorization."

Law of Conditional Contracts

Another legal question is: "What is the legal status of a recorded chattel mortgage or conditional contract of sale? Is it valid in all states? Can the gas corporation or seller remove the equipment from the building in which it is installed if the property owner defaults in making agreed payments?"

The outstanding characteristic of a conditional sale when compared to a chattel mortgage is the reservation of title by the seller. Under such a contract the seller is ordinarily entitled to retake or recover possession of the chattel or equipment if the buyer fails to pay the purchase price or installments, or otherwise breaches the contract of sale.

In many instances it is far from easy to determine whether a transaction is a chattel mortgage or a conditional sale. Generally, the distinction between a legal sale of gas appliances and a mortgage is:

A sale contract is a transfer of the title for a definite price with conditions, whereas a mortgage is security for the payment of a debt.

Modern higher courts consistently hold that either a properly recorded conditional contract of sale, or a chattel mortgage, gives the seller a first lien on the subject of the sale. Neither a conditional contract of sale nor a chattel mortgage is valid, with respect to innocent parties, unless it is properly and legally recorded. On the other hand, the law is established that either a conditional contract of sale, or a chattel mortgage, recorded in *any* county in *any* state in the United States is valid with respect to *all* persons in the *whole* United States. This rather unusual law may, at first hand, appear impractical and unreasonable.

An important point of law is that an unrecorded conditional contract of sale or mortgage is valid with respect *only* to persons who have *knowledge* of the transaction. Therefore, the sole purpose of recording a sale contract or mortgage is to "legally" inform innocent persons that the seller retains a first lien on the subject of the sale.

Generally speaking, a seller, contractor or gas corporation may remove or repossess gas equipment from a building in which it is installed, if the property owner breaches his contract. However, this rule of law is always the law especially if the building is mortgaged or sold by the original property owner who purchased the equipment. For example, contractors and other sellers very often find themselves confronted with legal controversy after a person purchases the building and refuses to permit the seller to remove equipment from the building. The same situation exists when the holder of a mortgage on a building

forecloses the mortgage. The holder of the mortgage may prevent either the owner of the building, or the new purchaser of the building, or the seller from removing gas equipment and other personal property permanently attached to the building. If either the owner of the building, or a new purchaser of the building, or one who forecloses a mortgage or a mechanic's lien on the building objects to removal of heating equipment the firm or selling operator *cannot* remove it unless he convinces the court that the same is *not* a legal fixture.

In order to be able to avoid litigations of this nature, it is necessary to acquire dependable legal knowledge of the law relating to legal "fixtures." Generally speaking, a legal "fixture" is anything that is attached to a building in such a manner that its removal will *permanently* damage the building.

For example, in Consolidated v. Smith, 189 S. E. 724, it was shown that the seller of equipment bolted it to the floor of the building. Later the owner of the building sold it and litigation developed when the new purchaser refused to permit removal of the equipment.

It was contended that the equipment did not become a part of the building, and it was not a "legal fixture" because the seller of the building did not *intend* to permanently attach it to the building. However, the court held equipment bolted to floors is a "legal fixture" which can *not* be removed, saying:

"Under the evidence, the jury was authorized to find it was a permanent fixture and a part of the building. There was evidence to support the contention of the plaintiff (seller) that it could be unbolted and removed from the building, without injury to the building, but it does not necessarily follow from this that it was not a permanent fixture and part of the building."

Of course, if a building owner and seller of gas equipment make a written contract by the terms of which the seller is given the privilege of removing all installed equipment upon breach of the property owner's sale contract the landlord *himself* is bound by this agreement. On the other hand, one who holds a mortgage or other lien on the building is *not* bound by the terms of the contract and neither is one who purchases the building.

Liability for Acts of Employes

Another interesting legal question is: "When is a gas corporation liable on contracts made by its employe?"

The answer is: When the gas corporation's officials place an employe in such position that the general public is *lead to believe* that the employe has authority to bind the corporation then, under these circumstances, the corporation is responsible for contracts, promises and statements made by the employe.

For example, in Tennessee Gas Co. v. Cooke Automobile Co., 206 S. W. (2d) 491, the testimony showed facts, as follows: The Tennessee Gas Co authorized an employe named Lerch to purchase several automobiles from the Cooke Automobile Co. Generally the cars were delivered on the same day they were sold to Lerch and purchase orders for the cars were not sent in by the gas company until long after delivery of the automobiles had been accepted by the corporation.

One day Lerch came into the automobile company's office and bought eight motor trucks and stated that he wished to purchase an additional Cadillac. Lerch told the automobile company's manager that he wanted the Cadillac for one of the officials of the gas company, and asked the manager of the automobile company to leave the name blank on the bill of sale, stating that he was not certain whether he would want it licensed in the name of the gas company or in the official's name. The car was billed to the company and the automobile company gave Lerch the invoice just as had been done on every one of the other cars sold. After unusual delay in receiving payment for the Cadillac, the manager of the automobile company called the office of the gas company and was informed that Lerch was no longer with the company. In other words, Lerch had appropriated the Cadillac and left employment with the gas company.

The automobile company sued the gas company for $3,500, the purchase price of the Cadillac automobile. During the trial the gas corporation attempted to avoid liability on the grounds that Lerch, the purchasing agent, did not present any writing or order to the automobile company from the gas corporation authorizing him to buy the automobile, nor did anyone connected with the corporation ever inform the automobile company that Lerch was authorized to buy automobiles for the corporation.

However, since the corporation had in the past paid for all other automobiles purchased by Lerch, the higher court held that the corporation had *impliedly authorized* him to purchase the Cadillac. In holding the corporation liable for payment of $3,500 to the automobile company the higher court said:

"The rule governing authority of an agent exists in accordance with the apparent authority which may be created 'by written or spoken words or any other conduct of the principal, which reasonably interpreted causes a third person to believe that the principal consents to have the act done on his behalf by the person purporting to act for him'. . . . The company knew that Lerch (purchasing agent) was dealing with Cooke Automobile Co., and if there was a limited authority, it was incumbent upon gas company to notify Cooke (automobile company) of this limited authority."

Also, see Hurst Co. v. Ledord, 268 S. W. 1090. Here the higher court held that where one of two innocent parties must suffer financial loss through acts of an employe, the loss should fall upon the one who authorized the employe to perform the act, rather than the innocent third party. Also, see Deposit Bank v. Ohio Oil Co., 62 S. W. (2d) 1048, and Herfurth et al. v. Horine, 98 S. W. (2d) 21. Both these latter higher courts held that an employer is liable for contracts made by an agent who was *held out* to the general public to have authority to make valid contracts. Hence, where a gas corporation consistently approves contracts made by its agent, it *implies* or admits that the agent has authority to make *all* contracts within the scope of the business.

Law of Service Contracts

Considerable discussion has arisen from time to time over the legal question: If the sale contract contains a clause that the seller or gas corporation will "service" the equipment, does such a clause in the sale contract change or vary the legal rights and liabilities of the parties?

The courts have held that under an ordinary installment payment or sale contract a purchaser became obligated to pay the *full* balance due, if he fails to make one or more installment payments specified in the contract. However, this rule of the law is *not* applicable with respect to gas appliances, or other apparatus sold under contracts in which the seller agrees to keep the same in operating order for a specified period, or agrees to "service" it.

Moreover, the fact that a contract of this nature provides that the seller or gas corporation shall supply service at times "when he believes the service is required" means that actually service must be rendered when *it is required*, whether or not the seller believes that service is necessary. The same law is applicable to equipment lease contracts.

For example, in the leading case of Sinn, 30 P. (2d) 761, it was disclosed that a gas corporation entered into a written contract to lease to a purchaser certain equipment for a stipulated rental to be paid in weekly installments. The contract contained the following clause: "In the event of default in the payment of any installment of this note, the holder (seller) thereof may at its option declare the remaining installments note then due hereunder *immediately due and payable.*"

The contract also provided that the seller would from time to time inspect

(Continued on page 44)

Index of Yields : Selected Utilities Stocks

	Oct. 1950	Sept. 1950	Aug. 1950	July 1950	June 1950	May 1950	Apr. 1950	Mar. 1950	Feb. 1950	Jan. 1950	Dec. 1949	Nov. 1949
Natural Gas Transmission Companies	5.19%	5.71%	5.46%	5.76%	4.86%	4.70%	4.77%	4.57%	4.83%	5.02%	4.75%	4.85%
Natural Gas Transmission & Distribution Companies	5.40	5.61	5.71	5.79	5.29	5.11	5.14	5.19	5.26	5.23	5.26	5.58
Manufactured & Mixed Gas Companies	5.24	5.52	5.55	5.76	4.98	4.66	4.77	4.71	4.75	4.62	4.75	4.94
Class "A" Electric Companies	5.56	5.67	5.59	5.64	4.94	5.13	5.24	5.15	5.38	5.40	5.48	5.49
Class "B" Electric Companies	5.99	6.06	6.35	6.41	5.58	5.30	5.37	5.42	5.37	5.47	5.68	5.77

Method of Compiling Index of Yields

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily market movements on the stocks comprising it.

The companies used in compiling this index are:

Natural Gas Transmission Companies: El Paso Natural Gas Co.; Northern Natural Gas Co.; Panhandle Eastern Pipe Line Co.; Southern Natural Gas Co.; Tennessee Gas Transmission Co.

Natural Gas Transmission and Distribution Companies: Columbia Gas System, Inc.; Consolidated Natural Gas Co.; Lone Star Gas Co.; Oklahoma Natural Gas Co.; Pacific Lighting Corp.

Manufactured and Mixed Gas Companies: Bridgeport Gas Light Co.; Brooklyn Union Gas Co.; United Gas Improvement Co.; Peoples Gas Light & Coke Co.

Class "A" Electric Companies: Boston Edison Co.; Commonwealth Edison Co.; Houston Lighting & Power Co.; Southern California Edison Co., Ltd.

Class "B" Electric Companies: Dayton Power & Light Co.; Hartford Electric Light Co.; Pennsylvania Power & Light Co.; Public Service Co. of Colorado; San Diego Gas & Electric Co.

John F. Falvey

CONTINUING their creeping improvement of the past several months, common stocks at last report had reached the highest average market level of the past two decades.

But it is significant that dividend income on industrial shares, as measured by the most widely accepted yardstick averages, currently is about 2.3 times the interest return on prime corporate bonds. This is only slightly less than the 2.38 to one ratio which had prevailed at the low point reached by the stock market in June 1949.

The answer rests with the sharply higher trend of company earnings and dividend payments witnessed in the interim. Earnings for the September quarter of 1950 are showing for the most part sizable improvement over the similar period a year ago. Dividend payments at the start of the fourth quarter were running about eight per cent ahead of 1949, with distributions to shareholders for the full year likely to reach a new all-time record high level.

All that is needed to send prices of corporate stocks higher and pare their income return in comparison with bond yields is an expression of confidence in the form of a fair Federal tax bill and less government interference with business in all its forms.

Corporate security offerings for September 1950 nearly equalled the total for the two preceding months, and it is not surprising that more than one-half of the total for the latest month represented utility securities, of which nearly 80 per cent consisted of bonds.

With the exception of the need for a small price concession to move the balance of the Tennessee Gas Transmission Company's $40 million of new 3's—to raise the yield to 2.90 per cent from the 2.88 per cent basis on which the issue originally was offered—the new issues have gone well and the unsold balance of recent corporate offerings now is practically nil.

Despite the top-heavy ratio of bonds to the total of new utility issues, leaders in the banking field are expressing concern that a shortage of debt securities impends, due chiefly to the increasing amount of private placements with insurance companies.

Some figures on this score may be enlightening. During the first six months of this year a total of $3,445,872,579 of

(Continued on page 46)

Claim Common Stocks Safe For Savings Banks

A THREATENED shortage of debt securities and the need to seek increased yields on investments may force savings banks soon to cast about for ways and means to enter the equity stock market.

In so doing they would be emulating the nation's colleges, which are placing increasing dependence on equity investments (AMERICAN GAS JOURNAL, April 1950) in the race to keep income ahead of increasing costs, or at least abreast of them.

The banks also would be taking a cue from the life insurance companies in New York State, which recently went on record as planning to obtain authorization to place five per cent of their investment funds in common stocks.

What such a step would mean to the equity market if taken by all life insurance companies may be gleaned from the fact that total new investments of the life insurance companies for the eight months ended August 31, 1950 aggregated $7,235 million, a gain of $1,289 million over the amount for the similar period a year ago.

And during the seven months ended July 31, last, the country's mutual savings banks' new investments totaled $930 million.

The case for common stock investment by the savings banks was presented on October 5 by Alfred C. Middlebrook, vice-president of East River Savings Bank of New York at the annual meeting of the Savings Bank Association of the State of New York.

Not only would purchase of equities help solve the income problem of the banks, he pointed out, but the number of equities which might be considered "conservative investments" has increased considerably during recent years.

Through buying equities, he said, the banks would be able to obtain maximum increase in investments without the need for commensurate outlay of investment funds.

Mr. Middlebrook was seconded in this respect by William H. Harder, vice-presi-

Each of the six leading gas companies in the AGA Servel gas refrigeration sales campaign received a hand-carved mahogany statuette of an American eagle for selling more Servel refrigerators in proportion to number of customers than any other gas company in its region. The representatives of the winning companies at the Atlantic City presentation ceremonies are, from left to right, W. C. Dahlman, Houston Natural Gas Corp., Beeville, Texas; Homer Pollan, Peoples Gas Light & Coke, Chicago; Jonathan Youk, Southern Union Gas Co., Carlsbad, New Mexico; W. Paul Jones, President, Servel, who presented the eagles; Jack Frost, Brooklyn Union Gas Co.; F. S. Thomas, Manufacturers Light & Heat Co., Pittsburgh; James F. Topping, Peoples Water & Gas Co., Fort Lauderdale, Florida.

dent of the Buffalo Savings Bank, in an appearance at the same banking session. He observed that ability of the savings banks to invest a portion of funds in equities would "help maintain a healthy balance in the capital structure of our industries" in addition to aiding the banks widen the income return on their invested funds.

(This maintenance of healthy capital structures is of prime importance to the utility companies for two reasons, among others: The need for conservative structures if they are to attract on a favorable basis the additional equity money they will need to finance property additions and improvements, and the insistence of a growing number of regulatory agencies that equity stocks represent an "adequate" proportion of utility capitalizations. AUTHOR)

Mr. Harder stressed the step taken by trust companies in New York State in obtaining passage by the 1949 State Legislature of legislation enabling them to invest 35 per cent of their funds in equities.

"The trend is unmistakable," he said. "The spread in yields between bonds and stocks has increased from 48 per cent during the 1930s to about 130 per cent in 1950. This fact probably more than any other has led trustees generally to use gradually increasing amounts of equities in their portfolios, and clearly illustrates what we mean when we say that we need complete flexibility in the choice of securities if we are to do our best for our depositors in a rapidly changing and dynamic economy."

Special Libraries Association Exhibits Model Library

A model gas library exhibited by the public utilities section of Special Libraries Association attracted many delegates at the AGA convention.

Librarians from various utility companies answered reference questions and supplied other information. They were also consulted by company members who wished to know how to build and maintain an information center.

In addition to a collection of reference material, there was a display sent from the utility libraries describing their activities and services.

The exhibit committee included Mary E. Agee, librarian, AGA; Cleora Caton, San Diego Gas & Electric Co.; Anita Glienke, Milwaukee Gas Light Co.; Josephine I. Greenwood and Catherine R. McQuade, Consolidated Edison Co. of New York; Louis L. McTague, United Gas Improvement Co.; Anna Irene Marten, Union Electric Co. of Missouri; Alma Clarvoe Mitchill and Esther L. Brown, Public Service Electric & Gas Co.; Clara Ray, Virginia Electric & Power Co.; William J. Soika, The Peoples Gas Light & Coke Co.; Richard D. Green, National Association of Electric Companies.

The Special Libraries Association is an international professional organization with a membership of more than 5,000 formed in 1909 by librarians of business, professional, governmental, and industrial organizations.

At the Special Libraries Association exhibit in Atlantic City are, left to right, Catherine R. McQuade, New York; Esther L. Brown, Newark; Mary E. Agee, New York; and Anna Irene Marten, St. Louis.

Part 2:

Tests Show Interchangeability Ranges Are Best Determined by Experiment

by Hall M. Henry

Vice-president, Negea Service Corp., Cambridge, Mass.

PART I of this paper outlined the many factors affecting the interchangeability of gases. One of the factors mentioned was that of port loading and primary air. To the layman the significance of these two factors is probably difficult to grasp.

Fortunately, William R. Fraser, assistant to manager of operations of Michigan Consolidated Gas Co., has combined these factors in what I consider more understandable language. This is as follows:

"Btu/cu.ft. air gas mixture at burner throat before lifting or flash back occurs affects the interchangeability of gases."

Mr. Fraser says the tolerable utilization range (before lifting or flash back occurs) of the heating value of the primary air-gas mixture in the throat of a burner has a bearing on interchangeability. For instance, the range of primary air-gas throat mixtures for a natural gas of a given analysis may be 260 to 160 Btu—whereas 1200 propane gas air is only 210 to 170. It is evident that if certain appliances are adjusted, on natural gas, for a Btu/cu. ft. of primary air gas mixture at the throat of 260 Btu, that the propane gas air gas would not operate satisfactorily on this particular burner adjustment since 210 Btu/cu. ft. is the limiting factor for propane air-gas mixture before lifting occurs. However, it is evident that if appliances are adjusted for satisfactory operation on propane air-gas whose tolerance range is 210 to 170—this is within the range of satisfactory operation with natural gas since burners can operate satisfactorily on natural gas with Btu/cu. ft. mixture of 260 to 160. This variation in range of throat Btu mixtures may in part account for the different conclusions that have been reached on the degree of interchangeability of some gases. It also explains why two gases may be interchangeable if adjustments are *first* made on one gas rather than the other.

Presented at annual meeting, New Jersey Gas Ass'n, Sept. 8, 1950.

Propane-Air Gas and Water Gas

There are a large number of propane-air installations which are being used by both the manufactured gas and natural gas companies for peak loads. Generally speaking the experience has been that with manufactured gas propane-air gas at the *same* Btu/cu. ft. as the manufactured gas may be used only to the extent of 10 per cent to 15 per cent of total. However, by *increasing* the heating value of the propane-air gas higher proportions have been used. The Dedham and Hyde Park Gas Co. for instance has successfully supplemented up to 42 per cent of the total sendout, its 660 Btu .73 sp. gr. carburetted water gas with 817 Btu propane-air gas of .93 to .94 sp. gr. By going to a slightly higher Btu/cu. ft. in the propane-air gas a 50-50 ratio is possible.

It may be of interest to point out that the Worcester company found in its test work on 528 and 660 Btu gas that it could add a slightly higher percentage of propane-air gas with the 660 Btu gas than they could with 528 Btu gas.

LP Gas-Air and Natural Gas Interchangeability

Case I—LP Gas-Air Substitute 100% for Natural Gas

There have been several reported results on the substitution of 100 per cent LP gas-air for natural gas where the natural gas failed completely. The most recently published report was prepared by Frank D. Howell of Dominion Natural Gas Co., Ltd., Ontario, before the operating section, American Gas Association, May, 1950. This company replaced a natural gas of 1040 Btu with propane-air gas of 1120 and 1.23 sp. gr., and with mixtures of 1160 to 1180 Btu propane-butane-air-gas mixture. The natural gas replaced was 86.7 per cent methane, 10.4 per cent ethane, 0.9 per cent oxygen, 0.1 per cent carbon dioxide, 1.9 per cent nitrogen, .635 sp. gr. This company reported that it had to make some adjustments on appliances with hard flame and certain old style graduating type thermostats had to be replaced with snap action thermostats. Some orifice changes were required as the proportion of propane-gas air to natural gas increased. However, once these changes were made, LP gas-air was (because of necessity) substituted 100 per cent for natural gas and service was quite satisfactory.

Mr. Howell also called attention to the necessity of replacing rubber regulator valve discs with leather and certain other operating problems. However, the significant statement was this:

"After the first two seasons of operation when we corrected the original difficulties in customers' appliances we found we could switch from 100 per cent natural gas to 100 per cent propane-air with almost no increase in customers' complaints."

Case II—Natural Gas Replaces Propane Gas Air Gas System

The Michigan Consolidated Gas Co. recently turned natural gas into a gas system composed of 3300 meters which had been using 1200 Btu propane-air gas. The natural gas was 1000 Btu/cu. ft. and .7 sp. gr. and was composed of 75 per cent methane, 14 per cent ethane and 11 per cent inerts. This company reports that after natural gas was turned in:

(1) No customer complaints were received; that it was practically indicated that the customers did not notice the change in gas.

(2) Complaints on gas utilization gas-air adjustments practically disappeared.

(3) The overall complaints in the system for all sorts of service, etc., meter trouble, pilot outages, etc., dropped to about 40 per cent of the normal daily complaints experienced in the previous year.

Mr. Fraser, of Michigan Consolidated, in commenting on the above results had this to say:

"This experience indicated that the nat-

ural gas substituted for the 1200 Btu propane-air gas 100 per cent and that practically perfect interchangeability resulted. This final statement must be thoroughly explained. *It is possible* to substitute the natural gas for the LP gas-air gas, but the *reverse* would not be true."

Thus we have these two situations where one company went from natural gas to LP gas-air *gas but had to make certain adjustments in appliances and* some replacement *of appliances* to satisfactorily use the LP gas-air gas 100 per cent. In the other situation where the company went from LP gas-air gas to natural gas—*no adjustments were required.* These are interesting illustrations and clearly show that the degree of interchangeability depends on *which gas* the adjustments are *first* made. Mr. Fraser, as has been previously stated, explains this by saying that the *tolerable utilization range* of the Btu/cu. ft. of primary air-gas mixture in the throat of an appliance adjusted for a propane-air gas of 1200 Btu/cu. ft. is also within the tolerable utilization range of the natural gas. However, burners can be so adjusted on a *natural gas* that they are without the range of tolerable throat mixture for propane-air gas. This also explains why some natural gas companies have reported propane-air gas is not a 100 per cent substitute for natural gas.

These two illustrations would seem to indicate, however, that it is possible to so condition the appliances on a system that *natural gas and LP gas-air-gas may be used 100 per cent as a substitute for the other.*

Natural Gas and Oil Gas Interchangeability

Case I—Oil Gas as 100 Per Cent Substitute for Natural Gas

There have been a number of instances where oil-gas in an emergency has been substituted 100 per cent for natural gas. However, in most of these instances the results have not been altogether satisfactory. Even in cases where the appliance performance has been satisfactory, the odor complaints have been substantial, and this type of complaint has risen with as little as 100 per cent oil gas added.

There have been cases where if the appliances were adjusted on the *soft* side for natural gas—and after certain appliances were modified for oil gas—an oil gas has been substituted 100 per cent for natural gas with *acceptable customer satisfaction.* (See Mr. Howell's report on Dominion Natural Gas Experience with Oil Gas.)*

As against the above result we have reports from other companies that say that oil gas may only be used up to 50 per cent to 60 per cent, and laboratory reports which show (for the natural gas used in test and kind and quality of oil gas used in the test) that oil gas may be used up to 80 per cent of the total. These variations in reported results are undoubtedly due to the *quality of the oil gas* and may be due in some respect to the *base appliance adjustment* or perhaps to not being willing to *modify* the appliances. In the case of the company that reported 100 per cent substitution of natural gas by oil gas, the company determined in *advance* the *kind* and *quality* of oil gas required—and the *kind* of appliance *adjustment* on natural gas that *would permit 100 per cent substitution with oil gas.* This may be the key to success in making these two gases 100 per cent interchangeable.

Oil Gas and Natural Gas Interchangeability

Case II—Natural Gas as 100 Per Cent Substitute for Oil Gas

Since a few companies have converted or are in process of converting over to oil gas of 950 to 1015 Btu/cu.ft. and as natural gas is expected in the near future in some of the companies, the degree of interchangeability of oil gas and natural gas is of interest.

These companies are interested in preparing their appliances through adjustments or modification or even replacements so that natural gas may be introduced with little or no further adjustments and so that the companies may use oil gas when and if needed. Several companies have had a group of so-called critical appliances adjusted on oil gas and then placed on the natural gas they expect to receive. The following is the report tests made by Cambridge Gas Light Co.

Test No. 1—Oil Gas to Natural Gas

Purpose—To determine what appliance changes would be necessary to convert from 951 Btu Cambridge (unscrubbed for light oils) oil gas to 1021 Btu natural gas.

Eleven types of appliances and burners, consisting of the major domestic appliances and known critical burners, were adjusted for medium operation (0 on burner scale) on 951 Btu Cambridge oil gas, transported to Staten Island, and connected to 1020 Btu Staten Island natural gas, using the same size orifices, pressure, and air adjustment that gave satisfactory operation on Cambridge gas.

Summary of Tests—The tests showed that the two gases are not interchangeable (under the conditions set up for the appliances) but (and this is extremely important) that no major appliance changes were necessary to convert from Cambridge oil gas to natural gas.

When going from oil gas to natural gas, there was a tendency for the burners to be overgassed and to have too much air.

In all cases, except two, the only change necessary was to adjust the air shutter. In some cases, no changes were necessary. With the luminous flame kitchen heating burner, it was necessary to insert a smaller size orifice spud to operate satisfactorily on natural gas. Part II of the test (reported later in this paper) showed, however, that this could be done *before* the introduction of natural gas.

It was necessary to drill the ports of the Barber jet type burner to obtain satisfactory performance on natural gas. This was the only burner where it was necessary to drill the ports, but Part II of the test likewise showed that this could be done *before* the introduction of natural gas. Here again we find that by modifying certain of existing burners, 100 per cent interchangeability is possible. There are very few of these burners on Cambridge gas lines.

In analyzing the results of these tests, the following facts should be remembered.

(1) Many appliances are equipped with natural gas burners in Cambridge today. Typical is that all pre S model Servel refrigerators are equipped with natural gas burners. S, W and BN

ANALYSIS OF GASES

Cambridge Oil Gas Unscrubbed		Staten Island Natural Gas	
Specific Gravity	.783 (Schilling)	Specific Gravity	.615
Btu	964	Btu	1020
CO_2	6.0%	CO_2	1.1 %
Ill.	24.2	N_2	0.72
O_2	.9	CH_4	92.52
CO	1.5	C_2H_6	4.15
CH_4	33.4	C_3H_8	0.93
H_2	14.6	Iso Butane	0.17
N_2	19.4	N. Butane	0.20
		Iso Pentane	0.04
	100.0%	N. Pentane	0.02
		Hexanes	0.10
		Heptanes†	0.05
			100.00%

models are equipped with mixed gas burners.

(2) A large percentage of domestic appliances installed in Cambridge since the conversion from water gas to oil gas in 1947 have natural gas burners.

(3) Some burners converted in 1947 have never obtained full input rating of the burner but perform satisfactorily. Typical are some range ovens, kitchen heating, and house heating burners.

(4) The ports of some burners (not too many) were drilled during the conversion in 1947.

THE AUTHOR SUMS UP

From reported experience of others we draw these conclusions:

1. Generally speaking the substitute gases thus far produced are not per se 100 per cent interchangeable. In other words, we cannot expect a substitute gas to be 100 per cent interchangeable unless something is done to the gases or the appliances.

2. The addition of inerts to certain gases has been found to improve the degree of interchangeability.

3. The chemical composition of the substitute gas has been found to have a most important bearing on the interchangeability of gases.

4. Proper preadjustment, modification or replacement of critical appliances has permitted 100 per cent substitution of one gas for another, that otherwise was not 100 per cent interchangeable.

NO. 1 TEST DATA

Appliance or Burner Tested	Flame Score	Actual Btu Input	Remarks Results before any Changes Made on Appliance Adjustment
1. Glenwood range (Old type)			
a. Large top burner (Star)	—2	10,600	Lazy but good flame
b. Small top burner (Star)	—2½	9,000	Slightly over-gassed Lazy flame
c. Oven burner	+4½	29,500	Over-gassed. Tendency to alightly lift
2. Heatbath luminous flame burner in coal stove	+5 max. 0 min.	32,000	Flame lifted from ports.
3. S 600 Servel refrigerator mixed gas burner	+4½ max. 0 min.	3,040	Tendency to want to lift on maximum flame
4. FAC Janitrol furnace	—2½	70,000	Over-gassed but good soft flame
5. 1220 Ruud auto. storage water heater	—1½	23,000	Good flame
6. J-11 Janitrol in coal boiler	+4	139,000	Satisfactory but on hard side
7. Hoffman instantaneous water htr. bnr. #6A	+5	10,200	Noisy & flame would lift
8. Hawks urn burner #39	+5		Over-gassed & flame lifted from ports
9. Bryant boiler burner—Barber jet tips	+5	11,800	Unsatisfactory burner lifted from tips
10. Magic Chef top burner	—1½	9,180	Good flame
11. Lion tank water heater burner	—3	21,700	Over-gassed but satisfactory

Oil Gas vs Natural Gas (1950 Tests)

Another company had tests run to determine the interchangeability of an oil gas of 1040 Btu and .74 to .76 sp. gr. analysis. 2.4% Co_2; 26.7% 111;.3% O_2; .6 CO; 42.4% CH_4; 17.5—H_2; 10.1% N_2.

The results indicated that the gases were for all practicable purposes 100 per cent interchangeable, provided the pressure on the oil gas was increased 1".

This company is now in process of converting its customers' appliances to oil gas 1015 Btu standard sendout of 1030 to 1040 and fully expects that with the advent of natural gas it will have little or no further appliance adjustments to make. We will learn when the natural gas is turned in whether their expectations are realized. This is another illustration where action was taken to predetermine the kind of gases that would interchange and then steps made to produce the kind of gases required. *Unfortunately, however, this company is having difficulty in producing the kind of gas it needs for interchangeability.* Unless this company or others are able (with the current state of the art of producing high Btu gases from heavy oil) to produce the kind of gases needed—then further research may be indicated.

The writer has thought that the Gas Production Research Committee (which has done an excellent job of showing that high Btu gases could be produced using heavy oil) should undertake to determine how different kinds of high Btu oil gases might be produced using heavy oil. In other words, we now know that sets can operate using heavy oil—let's learn how to make these sets operate so as to produce the kind of gases which will best interchange with other gases.

Test No. II—Natural Gas to Oil Gas

Appliances and burners used in Test No. I were readjusted for medium operation (0 on burner rating scale) on natural gas, transported back to Cambridge and connected to oil gas with settings made for satisfactory operation on Staten Island natural gas. Flame characteristics were noted and recorded.

When going from natural gas to oil gas there was a tendency for the burners to be *undergassed* and to *require more air.*

The Servel refrigerator with a mixed

NO. 2 TEST DATA

Appliance or Burner Tested	Flame Score	Actual Btu Input	Remarks
1. Glenwood Range			
a. Large top burner	0	7,500	62.5% of rated input
b. Small top burner	0	7,500	Little low on input
c. Oven burner	0	18,800	Satisfactory input
2. Heatbath luminous flame burner in coal stove	0 max. 0 min.	20,600	Good flame—low on input
3. S 600 Servel refrigerator mixed gas burner	—5 max. —2 min.		Unsatisfactory
4. FAC-60 Janitrol Furnace	—5	55,000	Yellow tips—would deposit carbon
5. 1220 Ruud Auto. Storage Water Heater	0	18,000	Good flame
6. J-11 Janitrol in coal boiler	—4	126,700	Burner works better on natural gas
7. #6A Hoffman instantaneous water heater burner #6A	—4	8,300	Tricky burner—very few in field
8. Hawks urn burner #39	0	18,600	Works fine on oil gas
9. Bryant boiler burner Barber jet tips	0	8,800	Works well on oil gas Could be drilled before conversion to natural gas.
10. Magic Chef top burner	0	7,600	This burner is interchangeable.
11. Lion tank water heater burner	—4	15,300	Should be preadjusted on soft side before conversion to natural gas.

gas burner gave an unsatisfactory flame that would probably produce carbon.

Oil Gas—Effect of Variations in Rated Input and Pressures

During the early period of the changeover to 951 Btu oil gas in Cambridge certain complaints arose which were unexplainable. For instance, a burner would be properly adjusted for nice blue flame and without any one touching the burner, it would turn to yellow. As a result of this the company arranged to make certain tests consisting of the following:

A burner was set up with the correct size spud to give the correct Btu input rating of the burner at 6½" pressure.

(1) The burner was then adjusted for medium adjustment (0 in flame rating scale). The pressures were then varied down to 2½" and up to 11½" pressure.

(2) On a second series of tests the burner was adjusted +2 on rating scale and the pressures decreased and increased.

Results:

In all cases the burners performed with a good flame showing a wide flexibility to the oil gas.

However, when the same burner was installed with a spud which gave a larger input than the rated input of the burner —and then adjusted for a medium flame (0 on burner scale) *then:*

Variations in pressure above or below the adjusted pressure gave a yellow flame even though at the *adjusted pressure* the flame was good.

These tests indicate that the utilization performance of oil gas may be affected by over-gassing and varying the pressure in the over-gassed appliance. It points the need for proper input rating of burners when oil gas is used. The ill effects of over-gassing on the interchangeability of a gas was also observed in the tests on interchangeability of a 660 Btu gas with a 528 Btu gas. This might indicate that more attention should be paid to using the correct input rating on burners.

Oil-Gas plus Air as Substitute for 660 Btu Carburetted Water Gas

There are companies now using or planning to use oil gas plus air as a substitute for *carburetted water gas.* The Cambridge Gas Light Co. was the first company to use oil gas diluted with air to 570 Btu/cu.ft. as a substitute for carburetted water gas of 528 Btu. The company resorted to this during its changeover to oil gas as it simplified its gas making, since it could make one gas, namely oil gas of 951 Btu/cu.ft., the requirements for a 528 Btu gas being obtained by mixing oil gas with air for those customers that were not yet converted to oil gas. This company carried some 10,000 customers for a 30 day period using 951 oil gas plus air to produce a 575 Btu gas. Insofar as the company could determine there were no increases in complaints.

This is Part 2 of Mr. Henry's paper. Part 1 appeared in the October issue of American Gas Journal.

The Bangor Gas Co., Bangor, Maine, has successfully used over the past year or so an oil gas air mixture of 575 Btu as a substitute for 528 Btu coal gas—carburetted water gas mixture.

As our New Bedford company wished to increase its plant capacity and effect some economy in production costs without the expense of a customer changeover, we investigated using an oil gas air mixture to replace their *660 Btu carburetted water gas.*

In order to determine the changes, if any, that would be required, the company undertook to test appliances on the two gases. The following is a report on the results.

Test III—From 660 Btu Carburetted Water Gas to 660 Btu Oil Gas Air Gas

Purpose—To determine the reaction of gas appliance burners adjusted for medium operation (0 on burner rating scale) on 660 Btu New Bedford gas when connected to 951 Btu Cambridge gas diluted with air to 660 Btu.

Seventeen appliances and burners were adjusted for medium operation on New Bedford gas, transported to Cambridge and connected to Cambridge gas using the same size orifices, pressure, and air adjustments that gave satisfactory operation on New Bedford gas.

Summary—All the appliances and burners operated satisfactorily on the diluted 951 Btu test gas with the exception of the Buzzer urn burner.

The Buzzer urn burner has no air shutter. It was necessary to plug off about 4/5 of the primary air intake to make this burner operate satisfactorily.

There was a general tendency for the burners to burn on the hard side with the diluted test gas and with a slight reduction of input of about six per cent.

GAS ANALYSES

	951 Btu Cambridge Gas	Test Gas (951 diluted with air to 660)
Btu	958	669
Specific Gravity	.77	.848 (Schilling)
CO_2	6.3	3.5
Ill	24.0	16.1
O_2	.8	7.2
CO	1.4	1.2
CH_4	33.7	26.0
H_2	14.2	8.2
N_2	19.3	37.8

As a result of these tests the company has in process of installation one 12 ft. 4 shell Gas Machinery high Btu oil gas set with suitable Cutler Hammer dilut-

(Continued on page 42)

NO. 3 TEST DATA

Appliance and Burner Tested	Flame Score	Actual Btu Input	Remarks
1. Glenwood K.H. range			
a. Large top burner	+1½	13,400	Difficult to keep center port lit
b. Small top burner	0	11,400	Good flame
c. Oven burner	0	19,300	Good flame
d. K.H. burner	—3.5	25,900	Little noisy but satisfactory
2. Hardwick 20" range			
a. Large top burner	0	10,600	Good flame
b. Small top burner	0	8,300	Good flame
c. Oven burner	+1	19,300	Good flame
3. Servel BN 800 refrigerator	0 max. 0 min.	3,150	Perfect flame
4. Ruud 2121 auto. storage water heater	0	23,500	Perfect flame
5. CV 60 Humphrey ten. htr.	+2.5 high 0 low	57,300 high 10,800 low	Good flame
6. FEC 90-84 Janitrol furnace	0	91,700	Good flame
7. Ruud instantaneous water heater burner	+1	7,200	Good flame
8. Pittsburgh instantaneous water heater burner	+2	9,600	Good flame
9. #103 Buzzer urn burner	+6	15,000	Blows off—Will not light
10. #25 Ruud tank water heater	+3.5	27,000	Satisfactory flame
11. Junaire burner 4 tips	+3.5	15,400	Satisfactory flame
12. Barber jet burner 4 tips	+1	8,700	Good flame
13. Luminous flame ring burner	+1	31,200	Good flame. Does not smoke
14. Servel water heater burner #WA 30W	0	30,300	Perfect flame
15. Temco floor furnace	0	31,200	Perfect flame
16. JCI Janitrol burner	0	97,100	Perfect flame
17. #84X Roberts Gordon burner	0	110,600	Perfect flame

LOW LABOR COSTS FOR CLEANING result from the slag-resistant properties of the Norton Crystolon* silicon carbide door arches and circle brick in this typical gas generator.

Lined to last 10,000 hours or more

... with NORTON CRYSTOLON bricks and blocks

If fire-clay brick walls are causing you to shut down your generators every 3500 hours or so for repair of spalled, eroded or cracked refractories, it will pay you to switch to Norton Crystolon silicon carbide walls.

True, your first cost is higher but increased generator capacity, lower labor costs for maintenance and longer lining life make up the difference many times over.

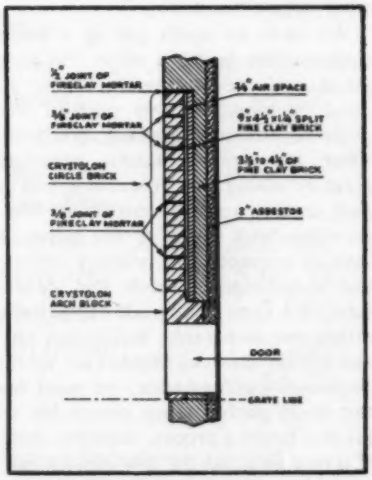
High resistance to slag penetration pays off 3 ways

Because Norton Crystolon bricks and blocks are so hard and dense, slag can't penetrate; clinkers can't get a death-grip on the walls. In fact, when the clinker ring is broken, it just falls free without pulling away the surface of the brick. This means that you can quickly and easily maintain a larger effective generator cross-section for maximum production. It means that you spend less labor time, lose less production time, for cleaning operations. It also means that freedom from spalling adds hours to the life of your walls.

Write for Bulletin 862

For more complete information about Crystolon shapes as applied to gas generator walls, consult your nearby Norton representative, or write direct for Bulletin 862. NORTON COMPANY, 701 New Bond St., Worcester 6, Mass.

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries



HOW TO BUILD EXTRA LIFE into a gas generator wall. Norton Alundum* cement is recommended for laying Crystolon shapes in gas generators.

NORTON

TRADE MARK REG. U. S. PAT. OFF.

Making better products to make other products better

Special REFRACTORIES

Canadian Representative

A. P. GREEN FIRE BRICK CO., Ltd. TORONTO, ONTARIO

Bare Fuel Cost Means Little In Industrial Economy

by Frederic O. Hess

President, Selas Corp., Philadelphia

FUEL cost enters the picture when gas is sold as a bulk fuel, or as a summer standby fuel, but is hardly ever of any influence if gas is used for heat processing, and if the customer has been taught to think in terms of fuel cost per unit of final product—as the electrical industry has so admirably done. To any customer fuel is only a means to an end, a means to his manufacturing process. If gas is sold as a processing medium it stays sold, and price rarely enters the discussion.

No, fuel cost is not the vital factor in our industrial economy today. But fuel cost is a critical factor in the gas industry because we make it so! We pay little attention to the industrial gas load, which is the major load of the gas industry and represents about thirty per cent of the total gas sales volume (excluding carbonblack, power generation and such other large consumers).

We have to uplift gas as a heating medium. We have to offset the propaganda and the familiarity of the electrical engineer, who is part of every single manufacturing plant. We have to offset the price-conscious purchasing agent by selling heat processing, end product, quality and cost instead of Btu by the cubic foot, therm or the gallon. We have to promote and practice extensive and long-range research and development. We have to upgrade industrial gas within our own ranks before our customer will do likewise. Most of all, we must emphasize performance; we must learn and study performance obtainable with gas as a heating process medium, instead of trying to stress the low cost of gas on a cubic foot basis or a Btu basis.

It means a recognition by the gas industry that an industrial gas man is not a fuel peddler but needs to be an industrial specialist and must acquire a profound knowledge and understanding of the territorial industries and their manufacturing processes. It means a broad educational program throughout industry—and in schools—of the outstanding merits of gas and the controllability of the combustion process, the flexibility of a gas flame.

This upgrading also includes gas rates, because gas as a processing medium warrants a higher price than the present rates for industrial fuel gas. The gas industry has an opportunity to render a big service to our industrial economy by upgrading industrial gas and charging in proportion to the service rendered.

If one industrial customer, who uses as much as six million cu. ft. per day, is prepared to pay (on a contract basis) as much as 40 cents per 1,000 cu. ft. for such a quantity—for all year around non-interruptible supply—we have proof a higher evaluation of gas for industrial processing is possible and acceptable—even welcome.

We have proof that industrial gas can be and is productive to industry and should be more than productive to the gas companies. It warrants making it so—we must make it so—by our own efforts and belief—to fulfill our obligation to industry and benefit our economy.

Abstract of paper presented at annual convention, American Gas Association, Atlantic City, N. J., Oct. 2-5, 1950.

Court Upholds State Right To Set Wellhead Price

The Kansas Supreme Court early in October upheld the right of the Kansas Corporation Commission to fix the wellhead price of natural gas. The court sustained the price-fixing right on the theory it is the commission that has the obligation and the authority to conserve and prevent the waste of natural resources. The court voted five to two. The dissenting opinion contended the commission's order of February 18, 1949, fixing the minimum price of gas at eight cents for 1,000 cubic feet, constituted a law, an authority granted only to the legislature.

Before the order, the Southwestern Kansas Royalty Owners Association, which said it represented 1,200 gas royalty owners, asked for the price-fixing order. The association contended the supply of gas was so great many gas companies signed contracts to buy at four cents a thousand cubic feet. Appellants in the Finey County District Court were Kansas-Nebraska Natural Gas Co., Inc., Northern Natural Gas Co. and Panhandle Eastern Pipe Line Co. Their contention was the Federal Natural Gas Act prevented the commission from interfering with the interstate transportation of gas.

The Oklahoma Supreme Court, in a similar decision, has sustained the right of its rate-making body to fix the minimum price of gas there at seven cents a thousand cubic feet.

NARUC Creates New Committee On Excess Profits Tax

The Executive Committee of the National Association of Railroad and Utilities Commissioners has authorized the creation of a special committee on excess profits taxes with a view to formulating recommendations designed to prevent the anticipated excess profits tax from impairing effective rate regulation of regulated utilities by authorized regulatory agencies.

The resolution which was adopted creating this special committee noted that Congress is expected to reenact the excess profits tax, and said that "under the former excess profits tax provisions of the 1942 Revenue Act unusually large and discriminatory tax liabilities were created which reduced net earnings of regulated public utilities to an extent where constructive and effective utility regulation was greatly hindered."

"It would appear in the public interest to provide a basis for determination of excess profits taxes for such regulated businesses, or the inclusion of such other provisions as would achieve the primary purpose of raising tax revenue without impairing effective rate regulation," the resolution said.

The special committee would be charged with the responsibility of "making a comprehensive study of the effect of excess profits taxation upon regulated utilities and the possibility of including in such legislation as may be proposed such provisions as will facilitate the regulation of utility rates in the interest of the rate payer."

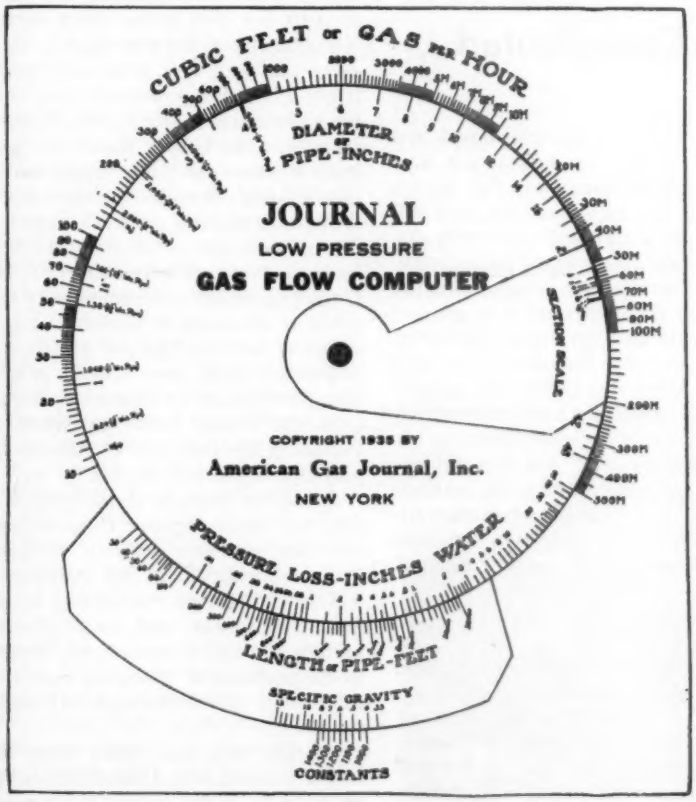
Basic Oil Gas Patent Granted Gas Machinery Co.

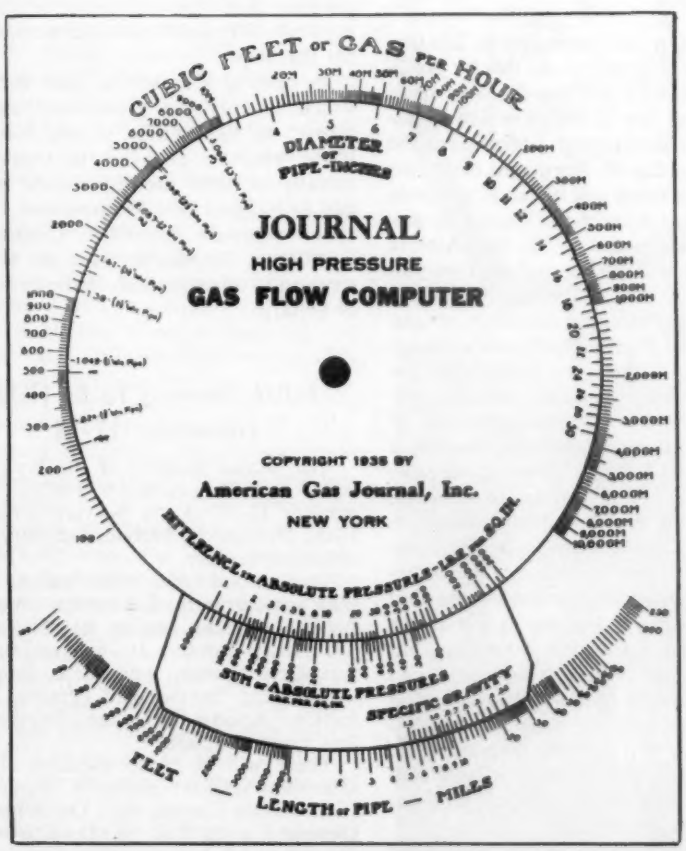
The Gas Machinery Co. of Cleveland has been granted a patent by the US Patent Office relating to the production of oil gas using various types of process oil and with oil as a fuel for heating. The patent covers the basic process for the production of oil gas by present day methods.

The process differs essentially from the Pacific Coast oil gas process in the extent of cracking which takes place. The temperature and reaction time of the new process are such that the oil gas produced has a higher heating value than Pacific Coast oil gas and differs from other prior processes. The present method has come to be known as the "high Btu oil gas process."

Processes coming within the scope of the patent have been and are being installed and licensed by Gas Machinery Co. The same basic steps are normally incorporated in the new Hall process, which incorporates improvement through means of regeneration.

The Gas Machinery patent bears the number 2,522,922, and results from original development work by H. M. Blain, of New Orleans, La. The process and equipment have been further improved, modified and expanded by Gas Machinery.





JOURNAL

Gas Flow

COMPUTERS

FOR LOW PRESSURES:

Cubic feet of gas per hour . . . . . 10 to 500M
Pipe diameters . . . . . ¾" to 48"
Pressure loss (inches) . . .01 to 10
Specific gravities . . . . . 1.5 to .35
Constants . . . . . 1400 to 1000
Pipe length (feet) . . . 30 to 30,000
Price $5.00

FOR HIGH PRESSURES:

Cubic feet of gas per hour . . . . . 100 to 10MM
Pipe diameters . . . . . ¾" to 30"
Difference in absolute pressure to . . . . . 500 psi.
Sum of absolute pressures . . . 20 to 2,000 psi.
Specific gravities . . . . . 1.5 to .35
Pipe length (feet) . . . 100 to 5,000
Pipe length (miles) . . . . . 1 to 250
Price $5.00

The computers are printed on heavy durable plastic, enclosed in leatherette cases with complete instructions for their use.

PUBLISHED AND SOLD ONLY BY:

AMERICAN Gas Journal

205 E. 42nd Street,
New York 17, N. Y.

Pacific Northwest-Canadian Natural Gas Problem Gets Even More Complicated

PACIFIC Northwest Pipeline Corp. seems to have rolled onto the inside track in the race for authority to transport natural gas from the Canadian province of Alberta into the Pacific Northwest.

In this respect it has usurped the favored position believed to have been held by Westcoast Transmission Co., Ltd.

Pacific (which filed with the Federal Power Commission on last July 10 for a certificate of convenience and necessity to build a pipe line from Texas to Oregon and Washington) has merged with Prairie Pipe Lines, Ltd., and with the latter's affiliate, Prairie Transmission Lines, Ltd., and the Alberta case of Pacific is being handled through the Canadian companies.

Pacific's case is strengthened by the fact that Prairie Transmission Lines has been chartered by a special act of the Canadian Parliament for the export of natural gas. The necessary certificate to actually export gas was applied for last April by Prairie Pipe Lines in its application to the Alberta Petroleum and Natural Gas Conservation Board.

Prairie is one of the two companies which to date has succeeded in obtaining the coveted Canadian charter, the other being Westcoast Transmission Co., which proposes to transport Alberta natural gas first to British Columbia and thence to Pacific Northwest.

But where Pacific Northwest now has the edge is in the fact that its combined application with Prairie to the Alberta Board contains a provision which, in the companies' own words, "permits the Province of Alberta to participate in this (Pacific Northwest) natural gas market to the limit which the regulatory authorities of its government feel that their presently developed reserves will allow."

While Westcoast Transmission has agreed in its application to feed natural gas first to Canadian consumers, *it nevertheless proposes to depend on Canadian fields for its entire supply.*

No such string is attached to the Pacific Northwest-Prairie proposal. Takings from Alberta fields are expressly limited at the start to the 100 million cu. ft. a day required for the British Columbia markets.

The balance of 250,000 Mcf per day of natural gas required to meet the full market demand during the initial operation will be obtained and transported from gas fields in the United States. However, should it be determined that there is a surplus of natural gas now available, the companies say they have a market for the additional gas and will make the market available for such gas.

The Pacific Northwest-Prairie application goes further than safeguarding the Alberta gas situation until it is assured that adequate reserves are available for export. It sponsors formation of a grid system in Alberta to gather the gas and proposes to obtain its requirements from the grid. It also proposes to open up for Alberta producers the gas demand potential of the eastern Canadian markets of Ontario and Quebec whenever Alberta reserves are developed in sufficient volume to meet such market requirements, which are estimated at 250,000 Mcf a day. It plans to do this by building a 1,020-mile 24" line from its main transmission line in Oklahoma to Windsor in Ontario. Through utilizing for the purpose the Pacific Northwest main line from Texas there will be made available an unlimited market for Canadian gas.

Our financial editor, John F. Falvey, has been closely following natural gas expansion. Here he gives his latest report on what is happening in Canada and the Northwest. The italicized words in the article are his. —*The Editor.*

"Our representation to the Alberta Conservation Board is such that we will dedicate 100,000 Mcf of gas per day to the British Columbia sections of our market," the Pacific Northwest management says. "When the exportable gas reserves of Alberta reach a sufficient volume to meet the initial requirements of Eastern Canadian markets, over and above that of British Columbia, we have agreed to build a lateral line to Windsor, Canada; and Prairie will distribute gas through eastern Canada, subject to the approval of the regulatory bodies involved. The actual amount of gas that the board will approve for export at this time is still a matter for conjecture, but our application is flexible in that we can economically go ahead and start taking exported gas on the basis of 100,000 Mcf per day, but agree to take all of the gas for export and dedicate it back into Canadian markets on a staged program as economically feasible."

The Pacific-Prairie application to the Alberta Resources Board gives implicit warning, however, that the matter of available gas reserves cannot be allowed to drift but that action must be taken immediately if the Province is to preserve for itself any substantial portion, if not all, of the potentially vast market for natural gas in the Pacific Northwest section of the United States. In this respect it points out that: "Applicant must immediately determine the source of natural gas to meet its market requirements for presentation of its full case before Federal Power Commission of USA. Unless applicant can immediately be assured of obtaining its minimum requirements of 100,000 Mcf per day from Canadian gas fields, then it must, of necessity, purchase *all* of its gas requirements from the United States gas fields, thus excluding the Province of Alberta from participating in this market."

A serious obstacle to the plan of Pacific Northwest Pipeline Corp. to link in one vast pipe line network the natural gas producing fields of Alberta and Texas with the gas consuming areas of Pacific Northwest and the provinces of eastern Canada is threatened, however, in the proposal of Tennessee Gas Transmission Co. to seek the eastern Canadian markets.

Already well established from Texas to the northeastern United States, Tennessee Gas is in a strong position to carry out its recently announced plans, granting that it is successful in obtaining Federal Power Commission approval for the step.

Its lines now extend to near Buffalo, which is only the proverbial "stone's throw" to the middle of the Niagara River where it proposes to turn over initially 115,000 Mcf of natural gas a day to Niagara Gas Transmission, Ltd., a new company formed by Consumers Gas Co. of Toronto to bring gas to that city and to other markets in the Province of Ontario.

NJUA Meeting To Be Held November 17-18

The annual meeting of the New Jersey Utilities Association will be held November 17-18 at the Seaview Country Club, Howard H. Melvin, secretary, announced recently.

Two round-table conferences, running concurrently, have been arranged for the morning session on November 17. Henry Roeser, Jr. will conduct a forum on taxation, while B. L. England will present "Service and Personal Protection Against Sabotage, Espionage, and Enemy Action."

There will be three speakers at the afternoon session: Henry R. Flanagan, Philadelphia Electric Co.; Dr. Schaefer, General Electric Co.; and Dr. Cooper of Brookhaven-Long Island Laboratories.

The annual dinner will be at 7:00 P.M.

Completion of 82 Mile Loop Brings So. Cal. An Additional 100 Million Capacity

A FULL three years in advance of schedule, the Southern California and Southern Counties Gas companies are now receiving an additional 100 million cu. ft. of mid-continent gas daily through the "Biggest Inch" Texas-California transmission line.

This increase in delivery capacity from 305 to 405 million cu. ft. daily results from the completion of an 82-mile, $5 million loop from Whitewater to a point just west of Puente constructed by the Midwestern Constructors, Inc., of Tulsa, Oklahoma, the Johnson Western Gunite Co. of San Pedro, Calif., and the L. E. Dixon Co. of San Gabriel, Calif.

At Puente, the 30-inch, coated, high pressure steel line is tied into a 30-inch line laid last year in anticipation of this construction. A gas control station has been built at the point of connection.

Route of the line from the starting point is by way of Banning, Beaumont, March Field, south of Riverside, crossing the Santa Ana River, then across the Chino Valley, south of Chino City, and across the Puente hills to the connection point.

In addition to the increase in delivery capacity daily, the new loop will maintain the storage capacities built into the "Biggest Inch" at the time of its original construction in 1947.

The El Paso Natural Gas Co., which constructed and operates the portion of the Texas-California line extending from Texas to the Colorado River, has just completed a number of additional loops similar in nature to the one completed by the Southern California and Southern Counties Gas companies.

Consolidated Western Steel Co. of Maywood, California, fabricated the 30-inch pipe for use in the line.

Suspension Bridge Selected

One of the most interesting features of the construction of the new loop was the raising of a 735-foot suspension bridge over the Santa Ana River. Normally a dry wash, the Santa Ana is subject to flash floods in the wintertime which have been known to turn the sand and sagebrush of the river bed into a raging torrent.

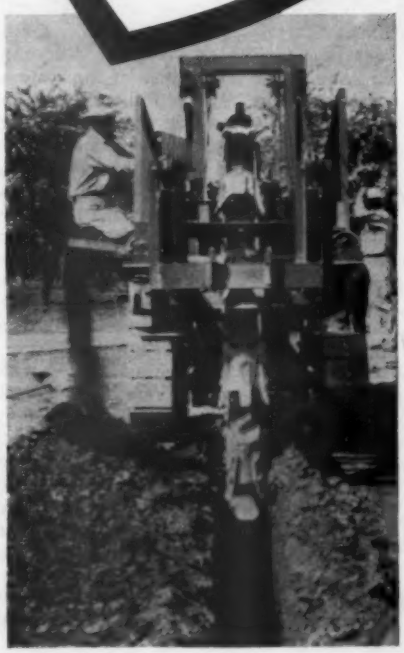
At first it was thought that an underground crossing might be made at the river, but when tests indicated that sand extended to a depth of 150 feet at midpoint of the channel, this proposition was discarded.

Designed by F. A. Sayler, and constructed and fabricated by the Consolidated Western Steel Corp. of Maywood, Calif., the span is composed of two structural steel towers 68 feet high and 62 feet wide placed on four foot caissons extending to bed rock. The main cables are two inches in diameter. The pipe is 22″ OD of ⅜″ wall high strength steel.

The usual construction for a bridge of this size is to add wind cables at the bottom of the tower. In consideration of both economic and safety factors the width of the towers was increased so that the main cables could carry both the vertical load and the wind load. Spacers were installed between main cables to hold cables in same relative position so they would act as designed.

The pipe itself was welded on the ground and raised to the span in one piece by five cranes acting as a team.

Gas Extensions ...services too!



CUT YOUR MACHINE INVESTMENT WITH VERSATILE

CLEVELAND TRENCHERS

Here's how to stretch your equipment dollar—do all your distribution trenching with one machine... the CLEVELAND "Baby Digger" Model 92. Trench depth: up to 5 full feet. Trench widths: from 10″ to 20″. Compact and highly maneuverable, it works handily in the tightest places, puts the edge of a 20″ trench within 17″ of a side wall. Loading on or off its tilt-bed "T-5" trailer in 5 minutes, it jumps quickly between jobs. Like its famous bigger brothers, the "92" is dependably fast and rugged. Year 'round digging season. See your distributor today.

THE CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

News of the Gas Industry

Volney H. Kyle, Jr., Is Now V-P Of Mich-Wisc Pipe Line

V. H. Kyle, Jr.

The election of Volney H. Kyle, Jr., as vice-president and manager of operations of the Michigan-Wisconsin Pipe Line Co. has been announced by Henry Fink, President.

Mr. Kyle has been with Michigan-Wisconsin since January, 1950. As engineer on the staff of Ford, Bacon & Davis, he had the field responsibility for the construction of the 1500-mile Michigan-Wisconsin line bringing natural gas from Texas.

After graduating from Tulane University, he was employed for two years in the engineering department of the Frisco lines, and two years in the Illinois division of highways. He then joined Ford, Bacon & Davis and assisted in the construction of one of the first cross-country natural gas pipe lines. From 1930 to 1937 he was employed by the Louisiana highway department, and later was employed by E. I. Dupont de Nemours Co. to construct the explosive plant at Millington, Tenn., where he remained as supervisor of operations until 1941 when he returned to Ford, Bacon & Davis.

Thiessen and Austin Advanced By Koppers Research Dep't

Dr. Gilbert Thiessen, former technical advisor for the chemical division of Koppers Co., Pittsburgh, has been named manager of the laboratory section of the company's central research department, according to Dr. G. F. D'Alelio, vice-president and general manager of the research department.

In his new post, Dr. Thiessen will supervise and direct all Koppers laboratory research performed in company-owned laboratories or plants and by contract in academic and commercial laboratories.

Appointment of Chester R. Austin as manager of the development section of the research department of Koppers Co. was announced at the same time by Dr. D'Alelio.

Dr. William C. Dearing, former director of research for the plaskon division of Libby-Owens-Ford Glass Co., has been named assistant manager of the Koppers research department laboratory section, and will work with Dr. Thiessen.

UGI Announces Promotions In Operating Department

The United Gas Improvement Co., Philadelphia, has announced several organization changes in the company's operating department headquarters staff.

E. H. Smoker has been appointed operating manager, Godon M. Jones has been named sales manager, and W. D. McElroy becomes gas engineer.

Mr. Smoker, who will supervise operating activities for the companies in the UGI System, joined the organization as a chemist in 1930 and was appointed manager of the development laboratory and assistant to the research director in 1940. In 1945 he was transferred to the operating department as gas engineer. He has been active in gas association work, both on national and state committees, for many years.

Mr. Jones, returning to UGI headquarters after nine years as sales manager of Consumers Gas Co., Reading, Pa., one of the companies of the system, joined UGI in 1917 at Philadelphia. He spent his early years in the engineering, accounting, and public relations departments. In 1932 he joined the advertising and sales promotion staff, and became advertising manager in 1935. In his new position, Mr. Jones will supervise sales and promotional activities for the companies in the system. He is second vice-president of the Pennsylvania Gas Association, and has also been active on state and national gas committees.

Mr. McElroy became associated with UGI in 1928 in the research department. He was successively laboratory technician, manager of the physical laboratory at Point Breeze, manager of the Chester engineering laboratories and general superintendent of the Ugite Plant at Chester, Pa. He returns to the UGI operating department after several years as manager of the development department of research and development division of Pittsburgh Consolidated Coal Co.

R. S. Bruns Made Vice-President Of Transcontinental

R. S. Bruns, Jr.

Robert Stewart Bruns, Jr., was recently elected a vice-president of Transcontinental Gas Pipe Line Corp. He will be in charge of all phases of the corporation's Eastern operations.

A graduate mechanical engineer, Mr. Bruns has had wide experience in the heating field. Prior to joining Transcontinental last year, he had served in an executive capacity with Preferred Utilities Manufacturing Co., on the design and development of oil and gas-fired generating equipment. At Transcontinental he has been in charge of contract and customer relations in the New York area.

Herrman Elected Vice-President Of Southern California Gas

Appointment of Walter J. Herrman as a vice-president of Southern California Gas Co. was announced recently by F. M. Banks, President and general manager.

Herrman, former vice-president of Commonwealth Services, Inc., New York, will have responsibility for all rate and appraisal matters.

The newly appointed vice-president has had more than 25 years' experience in the public utility and financial fields, specializing in rate and appraisal work and in matters relating to the economics of the public utility business. He began his utility career in 1924 with the Great Western Power Co. in California, after receiving a degree in electrical engineering from the University of California.

From 1929 to 1940 he was partner and vice-president in the investment firm of H. R. Baker and Co. During this period he specialized in the field of public utility securities.

He is a member of the general rate committee of the Edison Electric Institute and the parallel committee of the American Gas Association, and of the committee on economics of AGA.

HOW ROCKWELL METERING KEEPS AHEAD OF DEMANDS

The Rockwell organization has pioneered many design advances and improvements in meters to bring you better performance, greater capacity, longer life.

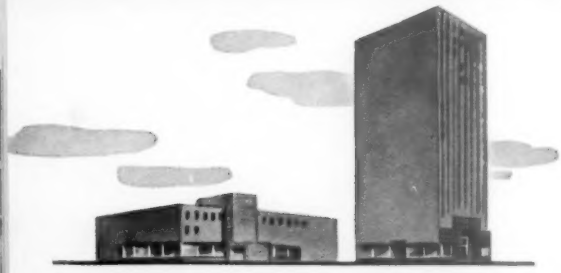
Consider these mechanical advantages in Rockwell-Emco tin meters. Outer cases are pre-coated with zinc chromate as a protection against rusting. Heavier flanges on table and case guard against leaks. Wide flanged tube screws with rolled steel threads provide greater strength. Extra deep cases permit full diaphragm movement without contact. Flag wires, flags and tangents have thicker sections for increased rigidity. Chrome plated cranks provide a better wearing quality. Consider, too, the important matter of meter capacity. In Rockwell-Emco tin meters larger ports and channels are provided to boost the safe maximum load acceptance and reduce pressure loss. In particular Rockwell-Emco 10 Lt meters are frequently being specified by far-sighted meter superintendents for new or replacement settings in anticipation of the heavier loads to come. They gain much greater capacity at little extra cost.

Bulletin No. 1020 describes Rockwell-Emco tin meters in full detail. Write for it today.

ROCKWELL-EMCO

TIN GAS METERS

MADE IN BOTH 5 LT AND 10 LT MODELS
CAPACITY RANGE FROM 150 CFH TO 500 CFH



Which would you choose?

TO SAVE GROUND AREA

Like a towering skyscraper these Rockwell-Emco meters go up in the air instead of spreading over the landscape. In consequence they occupy less floor area per cubic foot displacement than any other meter.

MOST METER IN LEAST SPACE

Rockwell-Emco No. 4½ and No. 5 meters are patterned after the best in structural steel construction. They are built around a strongly re-enforced, all-welded frame. A firm foundation for the working mechanism is provided by a heavy valve plate casting. Pressed steel construction gives these meters great impact strength, yet they are comparatively light in weight, economical to ship, easy to handle. When you want *positive* large capacity measurement with the highest degree of accuracy, specify Rockwell-Emco pressed steel meters.

Write for Bulletin 1033.

ROCKWELL-EMCO No. 5 with Combined Record Gauge. Capacity 5,000 cfh at ½" pressure absorption of 0.60 sp. gr. gas.

ROCKWELL-EMCO No. 4½ with Emcorector. Capacity 3,000 cfh at ½" pressure absorption of 0.60 sp. gr. gas.

a picture of COMPACTNESS

The narrow width of Rockwell-Emco pressed steel meters is particularly advantageous when manifolding a bank of meters to measure extra large loads. And being tall, indexes or recording gauges can be read easily without stooping.

Pittsburgh Equitable Meter Div. **ROCKWELL MANUFACTURING CO.**
Pittsburgh 8, Pennsylvania
Atlanta, Boston, Chicago, Columbus, Houston, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco, Seattle, Tulsa

ROCKWELL-EMCO

Large Capacity

PRESSED STEEL METERS

Meters

TIN

ALUMINUM

CAST IRON

PRESSED STEEL

Regulators

APPLIANCE

SERVICE

"1001"

BALANCED VALVE

There's a **ROCKWELL - EMCO METER & REGULATOR** for every use

Columbia Gas Makes Changes In Pittsburgh Group

Several personnel changes within the gas distribution department of the Pittsburgh Group companies in the Columbia Gas System, Inc., have been announced by G. E. Wilson, superintendent of distribution.

Arthur A. Gall has been advanced from district foreman to local manager of The Manufacturers Light and Heat Co. offices in Uniontown and Somerset, Pa.

Kenneth E. Harsh, district office manager at the Salem, Ohio, office of the Natural Gas Co. of W. Va., has been promoted to local manager of the Salem, Leetonia, and Lisbon offices.

Harold W. Lowman, chief clerk at the Alliance, Ohio, office of Natural Gas Co., succeeds Mr. Harsh at Salem.

Albert E. Marx and John D. Ford, both recent graduates in petroleum engineering from the University of Pittsburgh, have been employed by The Manufacturers Light and Heat Co. as district engineers in the distribution department.

Personnel Changes Announced By Ohio Gas Company

Several changes in personnel were recently announced by Ohio Gas Co., Bryan, Ohio.

James L. Tuttle, formerly superintendent of distribution, has been made general superintendent, succeeding J. T. Kelley, who joined Washington Gas and Electric Co., Tacoma, this summer. Mr. Tuttle has been with Ohio Gas since 1947. Prior to that he was employed by Allied New Hampshire Gas Co. in various operating capacities.

Albert H. Hartley, Jr., formerly engineer, has been named assistant to the manager. He was employed by Blackstone Valley Gas and Electric Co. before he joined Ohio Gas in May 1949.

James R. Jayne, a graduate of Tri-State College, has been employed as a student engineer.

R. T. Powers Dies Suddenly At Evanston, Ill.

R. T. Powers, superintendent of operations of Natural Gas Pipeline Co. of America and Texoma Natural Gas Co., died unexpectedly Oct. 7 of a cerebral hemorrhage at his home in Evanston, Ill. He was 53.

Mr. Powers had been with the company since 1930. He was highly instrumental in solving technical problems and making possible the first long distance pipe line for natural gas transmission. The pipe line brings gas to the Chicago area from the Texas panhandle.

The company for which he worked is affiliated with the Texas Illinois Natural Gas Pipeline Co. and The Peoples Gas Light and Coke Co. of Chicago.

Regional Managers Selected By General Electric

Selection of the regional managers for the four sales regions of the United States has just been announced by H. M. Brundage, manager, sales division for the air conditioning department of the General Electric Co. The regional managers and their headquarters are as follows:

Eastern region—H. N. McMenimen—570 Lexington Ave., New York City.

Central region—S. C. Bernhardt—The Merchandise Mart, Chicago 54.

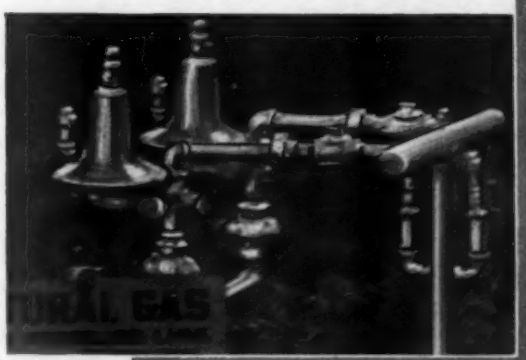
Southern region—E. J. Guillory—511-513 International Trade Mart, New Orleans 12.

Western region—L. M. Larkin—235 Montgomery Street, San Francisco 6.

The functions of the regional managers will include supervision of the company's sales representatives in their contacts with the franchised distributors and contractors in their particular region. They will handle the complete air conditioning product line which includes automatic heating equipment, air conditioning equipment and water coolers.

A WIDER RANGE

... of Delivery Pressure Control



REYNOLDS HIGH PRESSURE LINE REGULATORS

in parallel hookup have an increased range of capacity as well as a wider range of delivery pressure control. This also provides greater margin for emergencies. On inlet pressure the range is up to 650 pounds. For outlet pressure, this unit assures absolutely accurate and dependable control from 2 to 100 pounds. This variance in outlet pressure is made by use of different sizes of diaphram cases and further flexibility in the spring type is possible by use of different strength springs.

BRANCH OFFICES

H. D. "MIKE" MEUFFELS
423 Dwight Building
Kansas City, Missouri

SEIDENGLANZ & CO.
2nd Unit, Santa Fe Building
Dallas, Texas

REPRESENTATIVES

EASTERN APPLIANCE COMPANY
Boston, Massachusetts

WALDO S. HULL
163 W. Queen Lane
Philadelphia, Pennsylvania

Reynolds Gas Regulator Co.
ANDERSON, INDIANA, U. S. A.

GAS CONTROL SINCE 1892

Service Department Problems

(Continued from page 16)

"Doesn't a changeover result in anything worthwhile as related to the operations of a service department?" I am happy to say that the consensus for the companies that have experienced a changeover to natural gas, presents an encouraging story.

In general, after the immediate problems of conversion are back of you and the gas suspensoid condition is well under control, you may expect less service work per appliance than before changeover. One operator reports, "We feel that with natural gas we still will have our troubles, maybe some new ones, when we finally clean up our territory our troubles will be less than what they were during manufactured gas operations." The experience in Washington in connection with this is shown on Chart V. Here you see orders per appliance for the four major appliances, plotted by years since 1940. The years 1940 and 1941 may be assumed to be normal years for we, like yourselves, experienced a decrease in orders per appliance during the war. So, when comparing the years after conversion, we should go back to 1940 and 1941 for base.

Water heaters and ranges probably present the most comparable appliances for there has been no major change in service policy regarding these two appliances since 1940. The more favorable position of refrigerators now as compared to '40 and '41 reflects to a minor degree a change in policy wherein we have discontinued voluntarily cleaning refrigerators on a schedule which we were doing in '40 and '41. Excluding the voluntary service, the calls per year per refrigerator were 1.00 and 0.80 in 1940 and 1941 respectively.

The appliance showing the most favorable change is the house heater. There are two factors, unrelated to use of natural gas, which have influenced this trend namely (1) a more intensive campaign to have customers leave their house heating equipment pilots on during the summer, or, learn to start and turn-off without requesting company service and (2) the degree days in '48 and '49 were 4124 and 3448 as compared to 4726 and 4087 in '40 and '41 respectively. To enumerate the effect of each will require too much detailed discussion.

By the use of natural gas a very appreciable savings has been realized in eliminating practically all voluntary inspections and cleans of house heating equipment. Prior to the use of natural gas we had all of our house heating installations on a periodic clean schedule, varying from yearly to once every four years, depending on the make and type of appliance. To date we have not found it justifiable to make periodic inspections or cleans of this equipment.

Interchangeability Tests

(Continued from page 34)

ing equipment to produce a 660 Btu oil gas air gas mixture and expects to have this equipment in operation this coming winter.

Carburetted Water Gas plus Propane Vapor as Substitute for High Btu Oil Gas

As an aid in converting to oil gas our company considered the possibility of mixing *propane vapor* with 660 Btu carburetted water gas to produce a gas interchangeable with 951 Btu oil gas as produced in Cambridge. The AGA formula on interchangeability showed a gas of around 1080 to 1100 Btu composed of 660 Btu carburetted water gas and propane vapor would be interchangeable with 951 Btu oil gas. The following test shows the results.

Twelve types of appliances and burners, consisting of the major domestic appliances, plus known critical burners, were adjusted for medium operation on 951 Btu oil gas and connected to a 1095 Btu mixture of 660 Btu gas and propane vapor with the same size orifices, pressure, and air adjustments as used for satisfactory operation on 951 Btu gas.

The mixture was composed of 78 per cent of 672 Btu Framingham gas and 22 per cent 2500 Btu propane vapor.

Summary of Tests—All burner equipment burned with a good useable flame and most of the equipment burned with a medium flame (0 on burner rating scale). The test showed the prepared test gas mixture is interchangeable with Cambridge gas.

This finding is in our opinion of considerable value where a number of towns are connected through single lines to a central gas plant. By mixing propane vapor with the regular gas at *each* town line—the conversion to high Btu gas can be made before oil gas is even available—but more important it makes possible what would be an almost impossible conversion job.

Conclusion:

From a study of the reported tests by various companies and laboratories on interchangeability of gases it appears that the investigators have had one or more of the following objectives in view. It is also evident that the difference in the observed or reported degree of interchangeability of the *same kind* and *type of gas* may be due in a measure to the objective of the reporting *investigator.*

Objectives that may have been sought:

(1) To determine whether the gases undergoing test are 100 per cent interchangeable *per se*. This has been the usual approach and accounts in large measure for the differences in reported results.

(2) To determine whether the gases themselves could be *modified* to improve their interchangeability—namely, through addition of inerts, change in chemical composition, and their relative proportions. Little has been done on this approach, but the IGT is now active on this method of improving the interchangeability of gases.

(3) To determine whether the gases will give 100 per cent or acceptable interchangeability through proper *preadjustment* or modification or replacement of certain critical burners. The greatest degree of reported success has resulted from this procedure.

What We Can Do To Make Gases More Interchangeable

It is clearly evident that much can be

TEST DATA

Appliance or Burner Tested	Flame Score	Actual Btu Input
1. Magic Chef top burner	0	9,000
2. Lion tank water heater	−2	24,000
3. Hawks urn burner #39	−4	28,000
4. Hoffman instantaneous water heater burner #6A	−4	10,950
5. Bryant boiler burner Barber jet tips	0	10,290
6. Kehm tip	0	—
7. Glenwood (old type)		
a. Large top star burner	0	10,400
b. Small top star burner	0	10,400
c. Oven burner	+1	21,350
8. S 600 Servel refrigerator mixed gas burner	0 Maximum Flame 0 Minimum Flame	2,628
9. Heatbath luminous flame burner in coal stove	0 Maximum Flame 0 Minimum Flame	28,470
10. FAC-60 Janitrol furnace	0 to −1	59,000
11. J-11 Janitrol in coal boiler	−3	116,050
12. 1220 Ruud auto. storage water heater	0	19,500

done, by each company seeking to obtain a substitute gas, to increase the degree of interchangeability of the substitute gas. The following represent the more important steps that may be taken to improve the interchangeability of one gas with another:

(1) *Modify* or replace any burners that are especially critical. These may be surprisingly few in number.

(2) Determine the effect of the addition of inerts or other gases to the base gas or the interchange gas—on their degree of interchangeability, and add these gases to the base and interchange gas to the extent required.

(3) *a.* Adjust all gas appliances so they will work on the gas having the least Btu/cu.ft. of primary air gas mixture, *variation,* for proper burner performance, and either adjust burners with this gas in the distribution system, *or*

b. Instruct service men on the kind of adjustment, soft or hard, Btu input above or below or at rated input that must be made so the substitute gas will interchange more readily with the base gas.

(4) Determine the effects of gas pressure variation on the degree of interchangeability, and vary pressures accordingly.

(5) Produce gases with the proper chemical constituents, and in the proper proportion.

(6) Make the odors of the gases to be interchanged nearly the the same as possible. This may require adding some oil gas to natural gas the year around.

It is obvious from the results reported that we still have much to learn about the factors which will permit the greatest degree of interchangeability of one gas with another. It is also evident that since the gases being distributed by gas companies may vary widely in chemical constituents and in their relative proportions of these constituents, and the substitute gases that each company may wish to use will be different due to manufacturing methods, or for economic reasons, it is really up to each company to do its own testing for interchangeability. These companies can, however, be aided greatly by the experience of others, and each of us should make available our results for the general good.

L. Jenks Succeeds D. H. Hyatt As Rockhill Local Manager

D. H. Hyatt has resigned as local manager of the Rockhill (South Carolina) Gas Co. because of poor health, according to an announcement by H. Emerson Thomas, President.

He will be succeeded by Lewis Jenks, who has been handling wholesale dealer contracts for the Rockhill Gas Co. and its affiliates.

Elmon Lawrence Hall Dies After Brief Illness

E. L. Hall

Elmon Lawrence Hall, gas engineer and executive who retired a year ago as vice-president of Portland Gas & Coke Co., died recently after a brief illness. The 44 year veteran assisted in designing the company's oil gas plant in 1912-13 and played a leading part in the development of its by-product business.

Born at Leadville, Colorado, in 1881, Mr. Hall graduated from Stanford in 1902.

After an apprenticeship in the gas industry in the San Francisco bay area, he joined the Portland company in 1906. He served successively as chemist, assistant superintendent, general superintendent in charge of production and distribution, and vice-president and chief engineer.

He was a member of the American and Pacific Coast Gas Associations, having served as president of the latter in 1924-25. He also was a member of the American Chemical Society, American Institute of Chemical Engineers.

Swallow Heads Detroit Branch Of Bryant Heater

The appointment of J. H. Swallow to manager of the new Detroit branch office of Bryant Heater Division, A.G.E., Inc. Cleveland, has been announced by J. N. Crawford, director of sales.

Mr. Swallow was formerly with Detroit Gas Co.

Charles S. Lockhart, formerly assistant to Mr. Swallow, succeeds him as southern district sales manager with headquarters in Dallas.

Surface Combustion Publishes Cycle Annealing Bulletin

The cycle annealing process, in which time-temperature program control is used for annealing of steel forgings and other parts, is described in a new Surface Combustion technical bulletin.

The illustrated bulletin, describes the metallurgical background and process equipment for modern cycle annealing. The effect of cycle annealing in shortening processing time, providing accurate control of metal structure and improved machinability, is presented in detail.

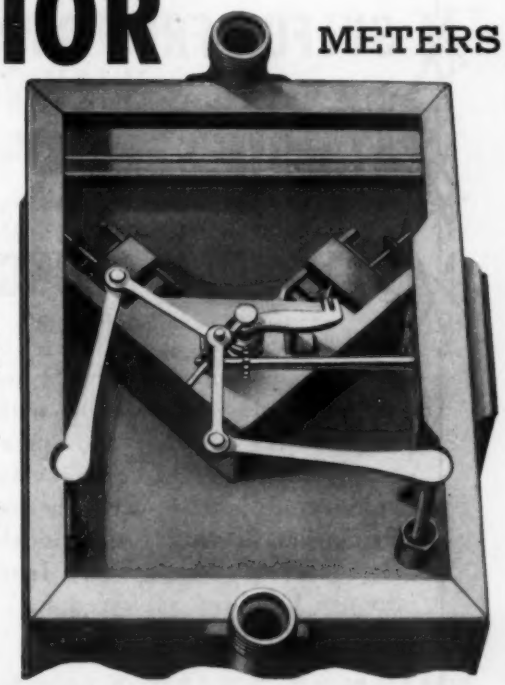
Annealing treatments for typical steels are presented together with chemical compositions, hardness values obtained and time temperature curves.

Copies are available upon request to Surface Combustion Corp., Toledo 1.

SUPERIOR METERS

ALL THAT THE NAME IMPLIES

- **FULL LINE** From 150 to 7,500 cu. ft. per hour capacity. For domestic, commercial & industrial use.
- **TIME TESTED QUALITY** One-piece, ribbed steel carriage. Heavy, non-fluttering valves. Flanged cases. Many other proved features.
- **FAST PARTS SERVICE** Interchangeable parts for "Superior" and other makes.
- **NATIONALLY RECOGNIZED** Increasingly specified by America's leading gas utilities.



Specialists in Tin Steel Gas Meters

CATALOG ON REQUEST

SUPERIOR METER CO., INC.

Meters • Meter Repairs • Diaphragms • Parts • Accessories

167 41ST STREET, BROOKLYN 32, N. Y.

Sellers May Recover

(Continued from page 28)

the equipment and supervise such repairs and adjustments as may *in its opinion be necessary* for its operation and maintenance. Also, a contract clause stated that any breach of the contract by the purchaser made him liable for the full balance due under the contract, and for any and all damages sustained by the seller by reason thereof.

After the purchaser had made several weekly payments, he defaulted in making further payments on the contention that the seller had not rendered service when actually it was necessary. The seller re-possessed the equipment, and immediately thereafter filed suit to collect the entire balance on the contract price.

In view of the fact that this contract contained the above mentioned clause by which the seller agreed to keep the equipment in operating order, and the testimony indicated that the seller had not rendered service *when it was reasonably necessary*, the higher court held the purchaser not required to pay the balance due on the contract, and said:

"In the instant case the agreement to make the weekly payments was based upon consideration of the use of the equipment and the service which plaintiff (seller) was to render in keeping the equipment in operating order. . . . When plaintiff re-possessed the equipment, it was not entitled to the unpaid balance, for it was not in a position to allege or prove performance upon its part."

It is important to know that if this had been a sale contract, instead of a rental contract, the higher court would have required the seller to take back the equipment and the seller would have been liable in damages to the purchaser for failure to render the agreed services. However, since it was a rental contract and the purchaser had used the equipment and had received value for the rentals which were paid, the court merely declared the contract to be at an end and held the purchaser or user not bound to pay other rentals specified in the contract, although the user had breached the contract by his failure to pay rentals when due.

Legal Right of Seller

In all legal controversies involving contracts for service the important consideration is: Did either the buyer or seller fail to fulfill his obligations assumed in the contract? In other words, while a gas corporation which sells gas appliances is liable for its failure to perform services in accordance with the terms of the contract, failure of a purchaser to keep equipment, an appliance or apparatus in proper adjustment, is a breach on the part of the purchaser which renders the purchaser liable, and relieves the seller from all liability.

For illustration, in Carisch, 255 N. W. 814, it was shown that a purchaser purchased gas equipment and paid $500 down. He was to pay the balance in 24 monthly installments. In addition, the purchaser was to pay a stipulated amount monthly for service, and inspections were to be made by the seller. The contract stated that the seller was to supply and install the equipment and supervise the necessary repairs and adjustments which *in its opinion*, were necessary. The equipment got out of adjustment and failed to operate satisfactorily. However, the purchaser failed to notify the seller who later sued the purchaser.

It is interesting to observe that the court held the seller entitled to recover the entire balance due because the purchaser breached the contract when he failed to notify the seller that the machine got out of order.

SULFUR-FREE GAS

AT LOWEST COST

WITH IRON SPONGE

Iron Sponge is a concentrated purification material that operates with high efficiency at high or low pressures, has excellent capacity and activity, gives long service between foulings and is simply and quickly regenerated. This is why Iron Sponge has been preferred for H_2S removal for over 75 years.

CONNELLY Inc.

3154 S. California Ave., Chicago 8, Ill.
Elizabeth, N. J. • Los Angeles, Calif.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946, of American Gas Journal, published monthly at Brattleboro, Vt., for October 1, 1950.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, American Gas Journal, Inc., 205 E. 42nd St., N.Y.C. 17; Editor, Elliott Taylor, 205 E. 42nd St., N.Y.C. 17; Business Manager, Lewis V. Hohl, 205 E. 42nd St., N.Y.C. 17.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) American Gas Journal, Inc., 205 E. 42nd St., N.Y.C. 17; E. Holley Poe, 70 Pine Street, N.Y.C. 5; Elliott Taylor, 205 E. 42nd St., N.Y.C. 17; Lewis V. Hohl, 205 E. 42nd St., N.Y.C. 17.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

ELLIOTT TAYLOR, Editor.

Sworn to and subscribed before me this 21st day of September, 1950.

(Seal) EUGENE JELINEK

(My commission expires March 30, 1951.)

CONVENTION CALENDAR

November

13-16 American Petroleum Institute, Annual Meeting, Los Angeles.
17-18 New Jersey Utilities Association, Annual Meeting, Seaview Country Club, Absecon, N. J.
26-Dec. 1 ASME Annual Meeting, Hotel Statler, New York.
27-29 American Standards Association, Waldorf-Astoria, New York.

December

3-6 The American Society of Refrigeration Engineers, Hotel Commodore, New York.
4-6 Institute of Cooking and Heating Appliance Manufacturers, Semi-Annual Meeting, Cincinnati, Ohio.

January

3-5 AGA Home Service Workshop, Hotel Statler, Washington.
22-25 The American Society of Heating and Ventilating Engineers, Philadelphia.

March

12-14 Mid-West Gas Association, Hotel Fontenelle, Omaha, Nebr.
29-30 New England Gas Association, Annual Meeting, Hotel Statler, Boston.

Satterwhite Named President Of Westcott & Greis

J. H. Satterwhite

The election of J. H. Satterwhite as President of the Westcott & Greis, Inc., Division of American Meter Co., Tulsa, was recently announced.

After graduation from the Virginia Polytechnic Institute, Mr. Satterwhite spent four years with the Hope Natural Gas Co. of Pittsburgh. There he assisted in the original tests on orifice meters and operated as a meter tester in western Pennsylvania and eastern Ohio. He also had charge of the Wilkinsburg test station. In 1915 he was general superintendent of the Creek County Gas Co. and, at the same time, was superintendent of the Yale Natural Gas Co.

In 1920, Mr. Satterwhite became a partner of Westcott & Greis for the distribution of Westcott gate valves. In 1933 the company became a division of the American Meter Co.

Mr. Satterwhite was active in the formation of the Natural Gasoline Supplymen's Association, and is a past President.

Burt C. Taylor Dies Suddenly In Dayton, Ohio

Burt C. Taylor, vice-president and treasurer of the Dayton Power and Light Co. died suddenly at his home in Dayton.

Mr. Taylor, born in 1896, spent most of his early life in Ohio. He came to work for Dayton Power and Light as a messenger in 1911. From that time he won constant promotions in the accounting division of the company. In 1937 he was named treasurer. He was elected vice-president in 1938 and selected as a member of the board of directors in 1942.

Sprague Names James W. Smith Southwest Sales Engineer

James W. Smith, Ralston, Neb., has succeeded the late Harold Kahler, Oklahoma City, as southwestern sales engineer for the Sprague Meter Co. of Bridgeport.

Mr. Smith's territory will cover Oklahoma, Kansas, Northern Texas, Arkansas, Northern Louisiana and Mississippi.

The new salesman served as meter superintendent for the past ten years at the Peoples Natural Gas Co. in Omaha.

Mr. Smith has served on various committees of the Mid-West Gas School held each year at Ames, Iowa, and served as chairman of the meter section during 1948-49. He is the author of two prize-winning papers on gas measurement.

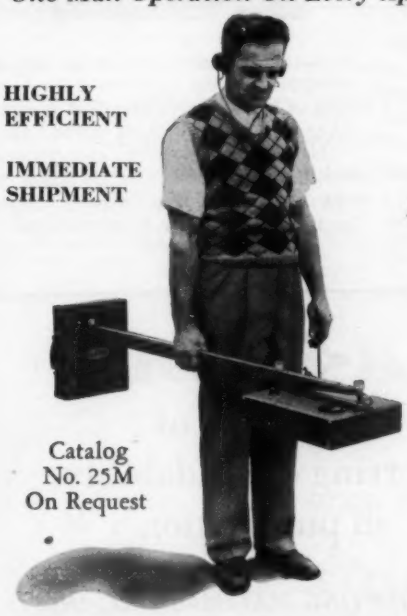
M-SCOPE Pipe Finder

LIGHTWEIGHT MODEL

One Man Operation On Every Application

HIGHLY EFFICIENT

IMMEDIATE SHIPMENT



Free Demonstration and Operating Instructions

Catalog No. 25M On Request

JOSEPH G. POLLARD CO., INC.

Pipe Line Equipment

New Hyde Park **New York**

Investigate!

NORWALK SUPERIOR SERVICE REGULATION

Leading utilities throughout the country are specifying Norwalk lever connected service regulators, either spring or weight loaded.

Send for bulletin 7500M. Why not also send us your specifications or tell us your problem? Our products can assure you accurate, trouble-free regulation for years to come.

NORWALK VALVE COMPANY

South Norwalk, Conn.

Manufacturers of Norwalk-Connelly Regulators since 1878

Servel Appoints Miss Miller Home Service Director

Servel, Inc., of Evansville, Ind., announces the appointment of Miss Bea Lawson Miller as home service director. John K. Knighton, general sales manager, said that Miss Miller will supervise Servel's program of educational service to homemakers through the home service departments of gas utility companies and appliance distributors.

Miss Miller, receiving two degrees from Teachers College, Columbia University, was an instructor in foods and cookery at Teachers. Later she was editorial assistant at both the Good Housekeeping Institute and the General Foods Corp. Immediately before the war, Miss Miller was home service director of the Great American Tea Co.

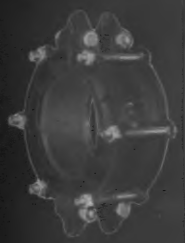
She will make her headquarters in the firm's Evansville offices.

FOR REPAIRING BELL AND SPIGOT JOINT LEAKS...

SKINNER-SEAL Bell Joint Clamp for stopping bell and spigot joint leaks under pressure. Gasket is completely sealed at bell face by Monel Metal Seal band—at spigot by hard vulcanized gasket tip.

AND BROKEN MAINS

SKINNER-SEAL Split Coupling Clamp. One man can install in 5 to 15 minutes. Gasket sealed by Monel band. Tested to 800 lbs. line pressure. A lasting repair. 2" to 16" incl.



M. B. SKINNER CO.
SOUTH BEND 21, INDIANA, U.S.A.

Selected Utilities Stocks

(Continued from page 29)

new corporate issues of all types came to market, of which $2,439,531,067 represented new money financing.

As against this the country's life insurance companies in the eight months ended August 31 purchased $2,753,000,000 of corporate securities to bring their total investment in American industry at that date to $24,269 million, or 39 per cent of their assets.

In other words, the life insurance companies are taking up more than 60 per cent of all corporate issues coming to market.

In the short space of four years the insurance companies' stake in industry has doubled.

Even with the cutbacks in construction expenditures necessitated by scarcities of essential materials, the gas industry's need for new money continues large and presumably will be so for many months to come. While the $435 million record-breaking issue of American Telephone & Telegraph Co. soon may put the market to a test, the market has recovered from the jitters which it experienced when the financing was announced.

Of more importance to companies contemplating financing is the form the new Federal tax bill will take. An excess profits tax would be more harmful to the natural gas industry than to other segments of the utility field, particularly to the newer gas companies which have capitalizations heavily laden with debt and the older companies which because of expansion have no long term high level of earnings.

But the milder form of EPT now being discussed by the Washington administration would have more to recommend it to the gas companies than a hike in the normal and surtax rate because the latter, once it goes into effect, presumably will be a permanent fixture, whereas an excess profits tax by its very nature would be only of temporary duration.

H-P Products Develops Model Conversion Burner

The manufacture of a working model conversion burner to be used for sales promotion was anounced by H-P Products, Louisville, Ohio.

The entire unit, built to one-fourth the size of the domestic model, is carried in

a metal case and can be set up in the prospect's home to show actual operation of the burner. The fuel is supplied from a refillable tank of bottled gas.

H-P Products is in the process of establishing national distribution under the direction of H. P. Bishop, President, and Harry E. Reilly, sales manager.

CLEVELAND

"A" TYPE METERS
"B" TYPE METERS
DIAPHRAGMS

Cleveland Gas Meter Co.
ESTABLISHED 1875
2009 Rockwell Ave., Cleveland 14 O. Phone CHerry 2351

GPM
The mark of unerring dependability in purification
GAS PURIFYING MATERIALS CO., INC.
3-15 26th Ave.
Long Island City 2, New York

BOOK REVIEW

MINERAL INDUSTRIES EDUCATION; by Edward Steidel, E.M., D.Sc. Published by The Pennsylvania State College, State College, Pa. 252 pages. $3.00.

Dean Steidel's book is not, as its title might appear to imply, a treatise or a handbook on pedagogical methods in mineral industries education, but it is rather an extensive summation of his own philosophy on education with respect to the mineral arts and sciences.

The book is comprised of three parts: Part 1, Roots of Human Progress, sets up and expounds the thesis that man's struggle for mastery over nature transcends, or should transcend, in significance his egocentric preoccupation with internecine warfare. Part II is A Philosophy for Conservation, in which the author urges a joint program of unified conservation of human and material resources. Part III, Wanted: Mineral Industries Colleges, concerns itself with a formula whereby education toward this goal can be advanced, with particular reference to the work of the Pennsylvania State College, School of Mineral Industries of which Dr. Steidel is dean.

Austin Joins Norwalk Valve As Sales Manager

H. R. E. Austin

The appointment of H. R. E. Austin as sales manager was recently announced by Norwalk Valve Co., South Norwalk, Conn.

Mr. Austin was formerly President of Austin Mason Co., a New York engineering manufacturing concern.

He was also associated with the National Cylinder Gas Co. As midwestern district manager, he pioneered the opening of several National Cylinder plants in a four state area.

Classified

SITUATION WANTED

Gas Industry Librarian: 25 years' experience organizing, classifying, maintaining manufactured and natural gas libraries. Extensive research experience in technical, economic, regulatory assignments. Compiled numerous bibliographies. Box 222, American Gas Journal, 205 East 42 Street, New York 17.

WANTED:

Steam turbo blower large enough for 8 foot carburetted water gas set. . . . Central Florida Gas Corp., Winter Haven, Fla.

HELP WANTED

"Midwest natural gas transmission and distribution company has opening for operating executive. Furnish full information as to qualifications." Address Box 223, c/o American Gas Journal, 205 E. 42nd Street, New York City 17.

CHARLES R. BELLAMY

NATURAL GAS—MANUFACTURED GAS AND MIXED GAS PROBLEMS

44 Prospect Ave. Montclair, N. J.

Phone—Montclair 2-3692

GENERAL ENGINEERING

GAS CONVERSIONS— PLANT CONVERSIONS
TO NATURAL GAS PLANT OPERATIONS
TO OIL GAS PLANT CONSTRUCTION

GAS CONSTRUCTION & SERVICE CO., INC.
217 Broadway New York 7, N. Y.

CONVERSIONS AND SURVEYS, Inc.
Gas Conversion Specialists
Conversion without Confusion
90 BROAD STREET NEW YORK 4, N. Y.

COAL AND COKE HANDLING
Complete engineering and installation service for coal and coke handling, screening, crushing, skip hoists and storage bins, including alterations to existing conveying and screening plants.
ROBINS ENGINEERS DIVISION
HEWITT-ROBINS INCORPORATED
157 Chambers Street New York 7, N.Y.

CRUSE-KEMPER COMPANY

AMBLER, PENNA.

MORE THAN FORTY-FIVE YEARS OF SOUND

STEEL PLATE CONSTRUCTION

GAS HOLDERS PURIFIERS

AGA Convention

(Continued from page 23)

made with these primary considerations:

(a) Better satisfied employees

(b) Improved customer relations

(c) Increased efficiency and better production

R. B. Wilson, vice-president, Mississippi Power & Light Co., Jackson, Miss., reviewed the development of corrosion control of distribution systems in his company, stating that "present policy is to use good coating plus cathodic protection as a standard adjunct to all new distribution systems as well as to all new main construction in existing systems."

"By July 1, 1950, nine years after the start of our program, we had cathodic protection applied to 500 miles of 3" equivalent steel main," Mr. Wilson explained. "This figure represents 62.5 per cent of all the 3" equivalent steel main in our entire system."

A. B. Lauderbaugh, Manufacturers Light & Heat Co., Pittsburgh, gave a "primer" talk on what corrosion is and what it does.

Hall M. Henry, Negea Service Corp., Cambridge, Mass., presented a paper giving a description of equipment designs used to produce high Btu oil gas using heavy oil.

The value of year-round pilot operation for house heating installations was the subject discussed by C. S. Hazel, of the Philadelphia Gas Works Co.

John Overbeck, Columbia Engineering Corp., Columbus, Ohio, summarized methods and practices which have proved to be practical in large volume gas measurement.

The paper on the effect of conversion to natural gas on the service department, by R. H. Bussard, Washington Gas Light Co., is printed in this issue of AMERICAN GAS JOURNAL.

G. K. Bachmann, Public Service Electric & Gas Co., Newark, discussed the economic aspects of metering, covering the over-all cost of metering and meter shop cost accounting. He gave as a proper goal "to be statistically guided in promoting maximum economy of metering."

"The Effect of the Components of Fuel Gases on Burner Flame Characteristics and Interchangeability" was the subject of a technical paper by Louis Shnidman and Jesse S. Yeaw, of the Rochester Gas and Electric Corp. They presented a method for the evaluation of the effects of the various components of complex gas mixtures upon the combustion characteristics of the flames produced by those mixtures. The data are also applicable for the calculation of the combustion characteristics of gas mixtures which can in turn be used for the definition of the limiting conditions required for the satisfactory interchange of one gas mixture for another.

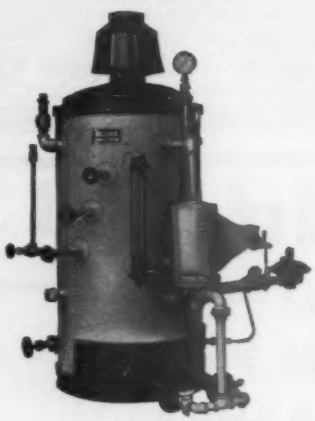
Louise Winslow, television home economist of The East Ohio Gas Co., Cleveland, "got down to cases" in discussing the ramifications of television techniques, basing her observations on three years in television. She elaborated on the following six points: 1—Establish your purpose. 2—Plan your show. 3—Try it out. 4—See it on the camera. 5—Plan for the unexpected. 6—Be willing to change.

In discussing "New Homes for New Customers," Mrs. Maxine Livingston, family home editor, *Parents' Magazine*, pointed out that it is important that each square foot of floor space in the new home serve several functions and be flexible enough to change with the changing needs of the family. She stressed ease of housekeeping in the new home.

INDEX TO ADVERTISERS

American Meter Co.	24-25
Bryant Heater Div.	7
Buell Engineering Co.	–
Cast Iron Pipe Research Association, The	4-5
Cleveland Gas Meter Co.	46
Cleveland Heater	–
Cleveland Trencher Co.	39
Columbia Burner Co.	–
Connolly, Inc.	44
Cooper Bessemer Co.	–
Cruse-Kemper Co.	47
Davey Compressor Co.	6
Detroit Regulator Co.	–
Fisher Governor Co.	–
Gas Machinery Co.	Front Cover
Gas Purifying Materials Co.	46
General Electric Co.	–
Hydrauger Corp.	–
Koppers Company Inc. Metal Products Div.	8
Lattner Mfg. Co., P. M.	48
North American Utility & Construction Corp.	Inside Back Cover
Norton Co.	35
Norwalk Valve Co.	45
Pittsburgh Equitable Meter Division	Insert at 40-41
Pollard Co., Joseph G.	45
Reynolds Gas Regulator Co.	41
Robertshaw-Fulton Controls Co.	–
Rockwell Manufacturing Co.	Inside Front Cover
Safety Gas Main Stopper Co.	48
Selas Corporation of America	–
Semet-Solvay Engineering Division, Allied Chem. & Dye Corp.	1
Servel, Inc.	–
Skinner Co., M. B.	46
Sprague Meter Co.	Back Cover
Stacey Manufacturing Co.	–
Stewart Warner	2
Superior Meter Co.	43
United Engineers & Constructors, Inc.	–
Vulcan Rubber Products Inc.	–

LATTNER
GAS BOILERS
1 H.P. to 45 H.P.



2 H.P. Gas Fired Pressing machine boiler. 100 lbs. ASME Code.

P. M. LATTNER MFG. CO.
CEDAR RAPIDS, IOWA

GOODMAN
USED SINCE 1897
Z HANDLE & LOCKING SLEEVE
GAS MAIN STOPPER

The Reliable Shut-Off for Street Mains

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

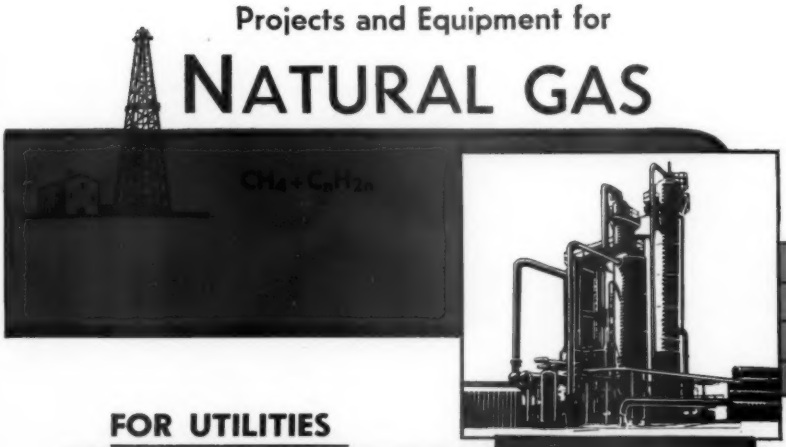
Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

Projects and Equipment for

NATURAL GAS

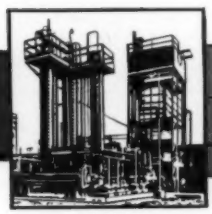


A. EXTRACTION PLANTS

PROPANE
BUTANE
NTL. GASOLINE
DISTILLATES

FOR UTILITIES

FOR CHEMICAL PLANTS



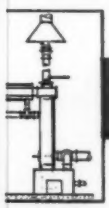
B.

H_2
CO_2
CO

CAT. DECOMPOSITION

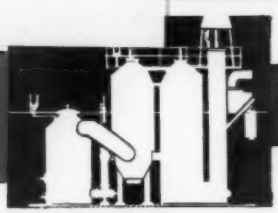
C.

FORMING
M



D.

with AIR
OXYGEN



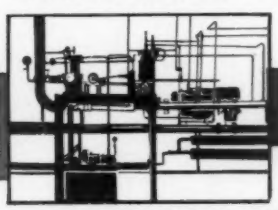
Q350
γ 0.4

E.

REFORMING in
CARB. WATER GAS SET

AIR

Q400-600
γ 0.8



F.

AUTOMATIC MIXING EQUIPMENT
NATL. GAS or PROPANE

G. CONVERSION FROM MANUFACTURED
to NATURAL GAS or PROPANE

CH_4
Q950
γ 0.6

CH_4
e

SUBSCRIPTION
ORDER
FORM

LEGEND

Q : heat content of gas before enriching in BTU/cu. ft.
γ : gravity of gas before enriching.
e : enriching with CH_4 or C_3H_8

RECENT REFERENCES

Item	No. Projects	Contracts	Total Capacity Cu. ft. per day
A	3	A. G. I. P.	140,000,000
B	4	—	40,000,000
C	—	Venice	1,300,000
	5	—	12,000,000
D	3	—	32,000,000
E	—	Milano	6,500,000
	6	—	20,000,000
F & e		3 Milano	
		1 Venice	
		1 San Remo	36,000,000
		4 Gaz de France	
G		29 Gaz de France	
		3 U. S. A.	120,000,000

North American Utility & Construction Corp.
North American Petroleum Gas Corp.
405 Lexington Avenue New York 17, N. Y.

Form 50501

AGA Convention

(Continued from page 23)

made with these primary considerations:

(a) Better satisfied employees

(b) Improved customer relations

(c) Increased efficiency and better production

R. B. Wilson, vice-president, Mississippi Power & Light Co., Jackson, Miss., reviewed the development of corrosion control of distribution systems in his company, stating that "present policy is to use good coating plus cathodic protection as a standard adjunct to all new distribution systems as well as to all new main construction in existing systems."

"By July 1, 1950, nine years after the start of our program, we had cathodic protection applied to 500 miles of 3″ equivalent steel main," Mr. Wilson explained. "This figure represents 62.5 per cent of all the 3″ equivalent steel main in our entire system."

A. B. Lauderbaugh, Manufacturers Light & Heat Co., Pittsburgh, gave a "primer" talk on what corrosion is and what it does.

Hall M. Henry, Negea Service Corp., Cambridge, Mass., presented a paper giving a description of equipment designs used to produce high Btu oil gas using heavy oil.

The value of year-round pilot operation for house heating installations was the subject discussed by C. S. Hazel, of the Philadelphia Gas Works Co.

John Overbeck, Columbia Engineering Corp., Columbus, Ohio, summarized methods and practices which have proved to be practical in large volume gas measurement.

The paper on the effect of conversion to natural gas on the service department, by R. H. Bussard, Washington Gas Light Co., is printed in this issue of AMERICAN GAS JOURNAL.

G. K. Bachmann, Public Service Electric & Gas Co., Newark, discussed the economic aspects of metering, covering the over-all cost of metering and meter shop cost accounting. He gave as a proper goal "to be statistically guided in promoting maximum economy of metering."

"The Effect of the Components of Fuel Gases on Burner Flame Characteristics and Interchangeability" was the subject of a technical paper by Louis Shnidman and Jesse S. Yeaw, of the Rochester Gas and Electric Corp. They presented a method for the evaluation of the effects of the various components of complex gas mixtures upon the combustion characteristics of the flames produced by those mixtures. The data are also applicable for the calculation of the combustion characteristics of gas mixtures which can in turn be used for the definition of the limiting conditions required for the satisfactory interchange of one gas mixture for another.

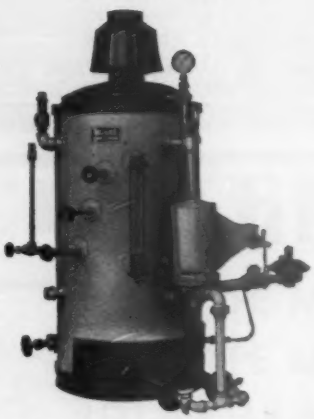
Louise Winslow, television home economist of The East Ohio Gas Co., Cleveland, "got down to cases" in discussing the ramifications of television techniques, basing her observations on three years in television. She elaborated on the following six points: 1—Establish your purpose. 2—Plan your show. 3—Try it out. 4—See it on the camera. 5—Plan for the unexpected. 6—Be willing to change.

In discussing "New Homes for New Customers," Mrs. Maxine Livingston, family home editor, *Parents' Magazine*, pointed out that it is important that each square foot of floor space in the new home serve several functions and be flexible enough to change with the changing needs of the family. She stressed ease of housekeeping in the new home.

INDEX TO ADVERTISERS

American Meter Co.	24-25
Bryant Heater Div.	7
Buell Engineering Co.	—
Cast Iron Pipe Research Association, The	4-5
Cleveland Gas Meter Co.	46
Cleveland Heater	—
Cleveland Trencher Co.	39
Columbia Burner Co.	—
Connolly, Inc.	44
Cooper Bessemer Co.	—
Cruse-Kemper Co.	47
Davey Compressor Co.	6
Detroit Regulator Co.	—
Fisher Governor Co.	—
Gas Machinery Co.	Front Cover
Gas Purifying Materials Co.	46
Genera	
Hydrau	
Kopper Meta	
Lattner	
North	
Norton	
Norwal	
Pittsbur	
Pollard	
Reynold	
Roberts	
Rockwel	
Safety	
Selas C	
Semet-S Allied	
Servel,	
Skinner	
Sprague Meter Co.	Back Cover
Stacey Manufacturing Co.	—
Stewart Warner	2
Superior Meter Co.	43
United Engineers & Constructors, Inc.	—
Vulcan Rubber Products Inc.	—

LATTNER
GAS BOILERS
1 H.P. to 45 H.P.



2 H.P. Gas Fired Pressing machine boiler. 100 lbs. ASME Code.

P. M. LATTNER MFG. CO.
CEDAR RAPIDS, IOWA

The Reliable Shut-Off for Street Mains

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

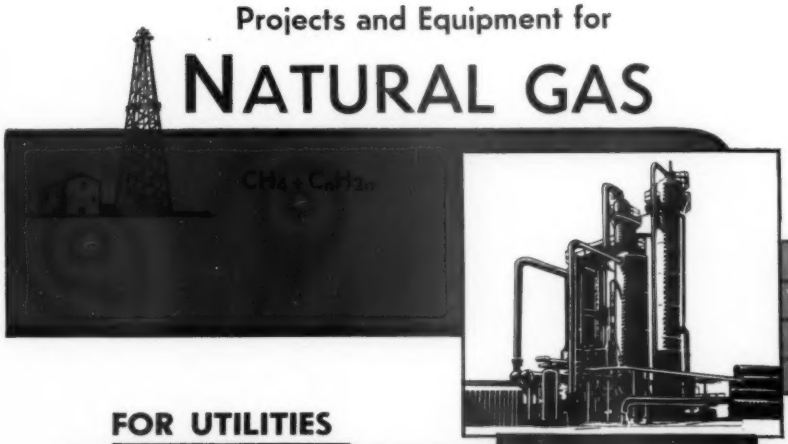
Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

Projects and Equipment for

NATURAL GAS



A. EXTRACTION PLANTS

- PROPANE
- BUTANE
- NTL. GASOLINE
- DISTILLATES

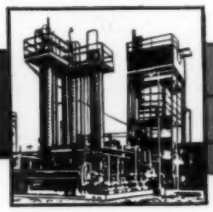
FOR UTILITIES

FOR CHEMICAL PLANTS

CH_4 Q930 γ 0.6

CH_4

B.

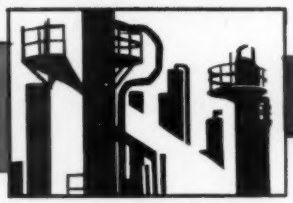


- H_2
- CO_2
- CO

CAT. DECOMPOSITION

e

Q310 γ 0.38

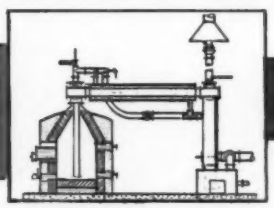


C.

CATALYTICAL REFORMING with STEAM

e

Q300-500 γ 0.75 - 0.8

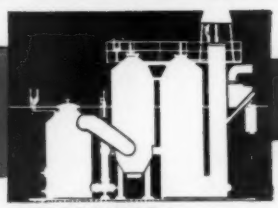


D.

REFORMING with AIR or OXYGEN

e

Q350 γ 0.4

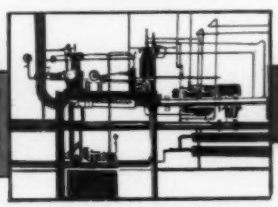


E.

REFORMING in CARB. WATER GAS SET

AIR

Q400-600 γ 0.8



F.

AUTOMATIC MIXING EQUIPMENT NATL. GAS or PROPANE

G. CONVERSION FROM MANUFACTURED to NATURAL GAS or PROPANE

LEGEND

Q : heat content of gas before enriching in BTU/cu. ft.

γ : gravity of gas before enriching.

e : enriching with CH_4 or C_3H_8

RECENT REFERENCES

Item	No. Projects	Contracts	Total Capacity Cu. ft. per day
A	3	A. G. I. P.	140,000,000
B	4	—	40,000,000
C	—	Venice	1,300,000
	5	—	12,000,000
D	3	—	32,000,000
E	—	Milano	6,500,000
	6	—	20,000,000
F & e		3 Milano	
		1 Venice	
		1 San Remo	36,000,000
		4 Gaz de France	
G		29 Gaz de France	
		3 U. S. A.	120,000,000

North American Utility & Construction Corp.
North American Petroleum Gas Corp.
405 Lexington Avenue New York 17, N. Y.

Form 50581

AS SIMPLE AS

A B C

TO REPAIR SPRAGUE METERS

A is for the Sprague Shop Manual and Service Maintenance Film.

B ... genuine Sprague Meter parts.

C ... construction simplicity of all Sprague Meters enables even the smallest shops to repair their own meters with a resultant saving in costs.

THE SPRAGUE METER COMPANY

... dedicated to the development of better gas measurement equipment

... BRIDGEPORT 4, CONNECTICUT